مراجعة عامة على مقرر مادة الرياضيات

طبقا للهيكل

للصف الثاني عشر العام

للعام الدراسي 2023 – 2022

اعداد

أ. محمد عبدالغني

1a) if $g(x) = 2x^2 + 18x - 14$, find $g(9)$ = ...

a. 310

b. 320

c. 143

d. 0

==========

1b) if $g(x) = 2x^2 + 18x - 14$, find $g(3x)$ = ...

a. $18x^2 + 45x - 14$

b. $18x^2 - 45x - 14$

c. $18x^2 + 54x - 14$

d. $18x^2 + 54x + 14$

==========

1c) if $h(y) = -3y^3 - 6y + 9$ find $h(5b + 3)$ = ...

a. $-375b^3 - 675b^2 - 435b - 90$

b. $-375b^3 - 675b^2 - 435b + 90$

c. $-375b^3 + 675b^2 - 435b - 90$

d. $375b^3 - 675b^2 - 453b + 90$

==========

1d) if $h(x) = 16 - \frac{12}{2x+3}$ find $h(6x)$ = ...

a. $16 - \frac{4}{4x-1}$

b. $16 - \frac{4}{4x+1}$

c. $16 + \frac{4}{4x-1}$

d. $16 - \frac{12}{12x-1}$

1e) if $g(m) = 3 + \sqrt{m^2 - 4}$ find $g(4m - 2)$ = ...

a. $3 + 4\sqrt{m^2 + m}$

b. $3 - 4\sqrt{m^2 - m}$

c. $3 + 2\sqrt{m^2 - m}$

d. $3 + 4\sqrt{m^2 - m}$

==========

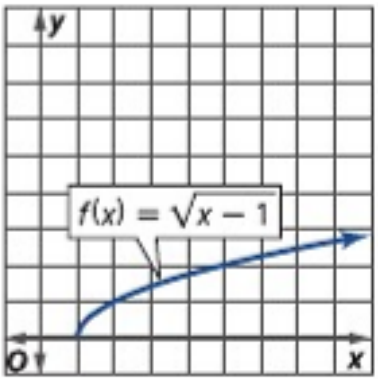
2a) find y-intercept from the graph

a. 0

b. 1

c. -1

d. no y-intercept



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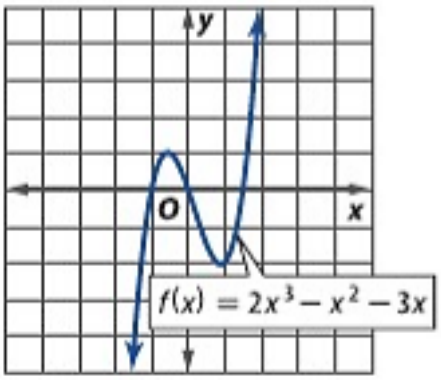
2b) the zeros of the function f(x) is .....

a. 0

b. 0 , -1 , $\frac{3}{2}$

c. 0 , 1 , -2

d. 0 , -1



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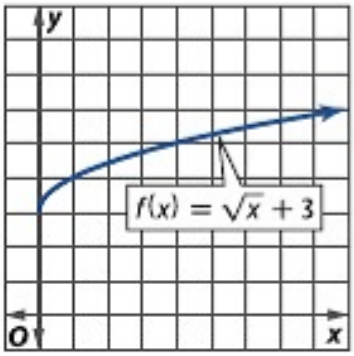
2c) y-intercept for f(x) is .....

a. 1

b. 2

c. 3 d. 4



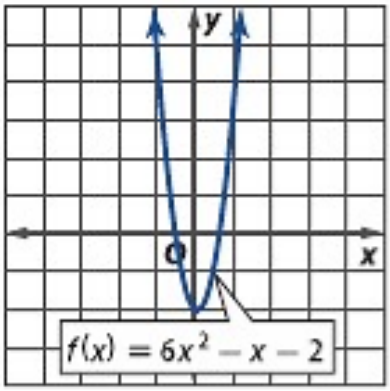
2d) the zeros of the function f(x) is .....

a. $\frac{1}{2}$, $\frac{2}{3}$

b. $-\frac{1}{2}$, $-\frac{2}{3}$

c. $-\frac{1}{2}$, $\frac{2}{3}$

d. $\frac{1}{2}$, $-\frac{2}{3}$



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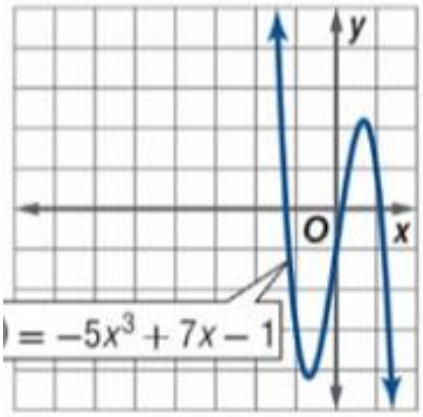
3a) the end behavior for the function f(x)

a. $\lim_{x\to\infty} f(x) = -\infty$, $\lim_{x\to-\infty} f(x) = \infty$

b. $\lim_{x\to\infty} f(x) = \infty$, $\lim_{x\to-\infty} f(x) = -\infty$

c. $\lim_{x\to\infty} f(x) = -\infty$, $\lim_{x\to-\infty} f(x) = -\infty$

d. $\lim_{x\to\infty} f(x) = \infty$, $\lim_{x\to-\infty} f(x) = \infty$



==========

3b) the end behavior for the function f(x)

a. $\lim_{x\to\infty} f(x) = -\infty$, $\lim_{x\to-\infty} f(x) = \infty$

$\lim_{x\to6^+} f(x) = -\infty$, $\lim_{x\to6^-} f(x) = \infty$

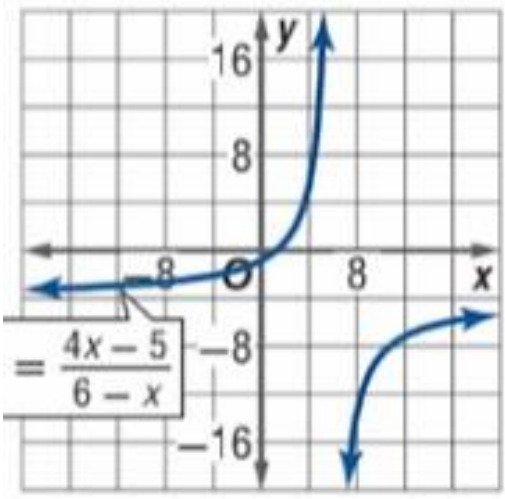
b. $\lim_{x\to\infty} f(x) = -4$, $\lim_{x\to-\infty} f(x) = -4$

$\lim_{x\to6^+} f(x) = -\infty$, $\lim_{x\to6^-} f(x) = \infty$

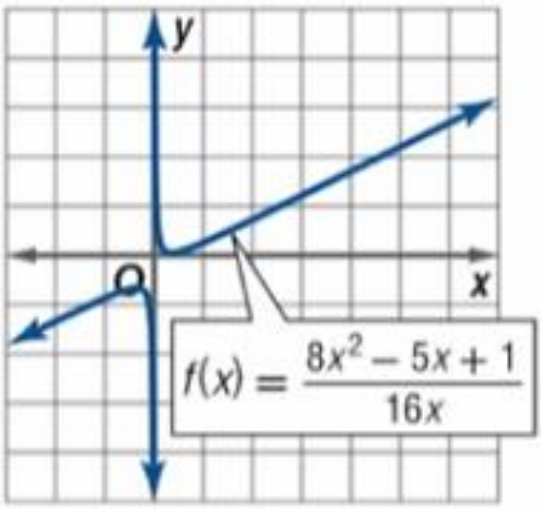
c. $\lim_{x\to\infty} f(x) = \infty$, $\lim_{x\to-\infty} f(x) = -\infty$

$\lim_{x\to6^+} f(x) = -\infty$, $\lim_{x\to6^-} f(x) = \infty$

d. $\lim_{x\to\infty} f(x) = 4$, $\lim_{x\to-\infty} f(x) = 4$, $\lim_{x\to6^+} f(x) = -\infty$, $\lim_{x\to6^-} f(x) = \infty$



3c) the end behavior for the function f(x)



a. $\lim_{x\to\infty} f(x) = -\infty$, $\lim_{x\to-\infty} f(x) = \infty$

$\lim_{x\to0^+} f(x) = -\infty$, $\lim_{x\to0^-} f(x) = \infty$

b. $\lim_{x\to\infty} f(x) = \infty$, $\lim_{x\to-\infty} f(x) = -\infty$

$\lim_{x\to0^+} f(x) = -\infty$, $\lim_{x\to0^-} f(x) = \infty$

c. $\lim_{x\to\infty} f(x) = \infty$, $\lim_{x\to-\infty} f(x) = -\infty$

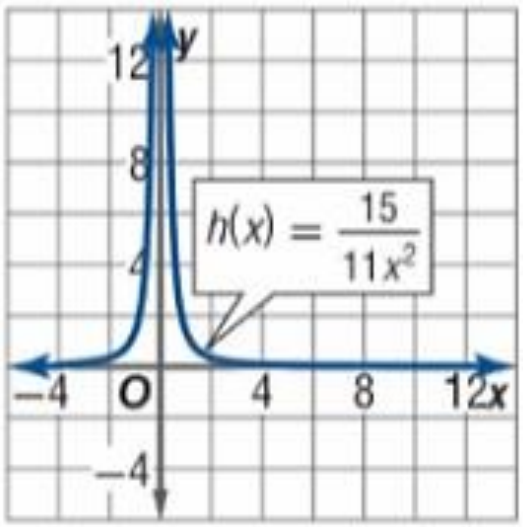
$\lim_{x\to0^+} f(x) = \infty$, $\lim_{x\to0^-} f(x) = -\infty$

d. $\lim_{x\to\infty} f(x) = 0$, $\lim_{x\to-\infty} f(x) = 0$

$\lim_{x\to0^+} f(x) = -\infty$, $\lim_{x\to0^-} f(x) = \infty$

==========

3d) the end behavior for the function f(x)



a. $\lim_{x\to\infty} f(x) = 0$, $\lim_{x\to-\infty} f(x) = 0$

$\lim_{x\to0^+} f(x) = -\infty$, $\lim_{x\to0^-} f(x) = \infty$

b. $\lim_{x\to\infty} f(x) = 0$, $\lim_{x\to-\infty} f(x) = 0$

$\lim_{x\to0^+} f(x) = \infty$, $\lim_{x\to0^-} f(x) = -\infty$

c. $\lim_{x\to\infty} f(x) = \infty$, $\lim_{x\to-\infty} f(x) = -\infty$

$\lim_{x\to0^+} f(x) = \infty$, $\lim_{x\to0^-} f(x) = \infty$

d. $\lim_{x\to\infty} f(x) = 0$, $\lim_{x\to-\infty} f(x) = 0$

$\lim_{x\to0^+} f(x) = \infty$, $\lim_{x\to0^-} f(x) = \infty$

4a) find the average rate of change of the function

$$g(x) = -4x^2 + 3x - 4 \ \ on\ the\ interval\ [-1\ ,3\ ]$$

a. 5

b. -5

c. 2

d. -2

==========

4b) find the average rate of change of the function

$$h(x) = \frac{x+5}{x-4} \ \ on\ the\ interval\ [-6\ ,2\ ]$$

a. -o.54

b. 0.45

c. -0.45

d. 0.54

==========

4c) find the average rate of change of the function

$$f(x) = \sqrt{x-6} \ \ on\ the\ interval\ [8\ ,16\ ]$$

a. 0.2

b. 0.23

c. 0.22

d. 0.21

==========

5a) find $(f\ o\ g\ )(x)\ when\ \ f(x) = \frac{1}{x+1}\ ,\ g(x) = x^2 - 4$

a. $\frac{1}{x^2-3}$

b. $\frac{1}{x-3}$

c. $\frac{1}{x^2+3}$

d. $\frac{2}{x^2-3}$

==========

5b) find $(f\ o\ g\ )(x)\ when\ \ f(x) = x^2 - 9\ ,\ g(x) = \sqrt{x+3}$

a. $x + 6$

b. $x - 6$

c. $x^2 + 6$

d. $x + 12$

==========

5c) find $(f\ o\ g\ )(x)\ when\ \ f(x) = \sqrt{x-2}\ ,\ g(x) = x^2 + 8$

a. $\sqrt{x^2+6}$

b. $\sqrt{x^2-6}$

c. $\sqrt{x^2}$

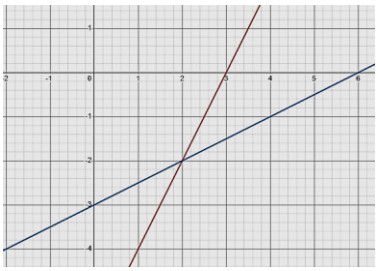
d. $x^2 + 6$

==========

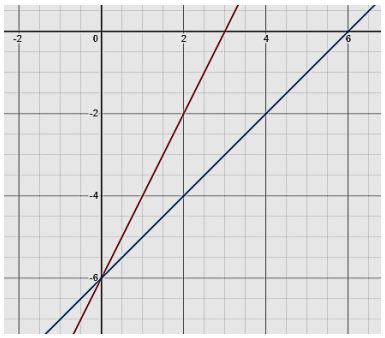
6a) the graph of f(x) and the inverse $f^{-1}(x)$ is

a.

b.



c.



d.

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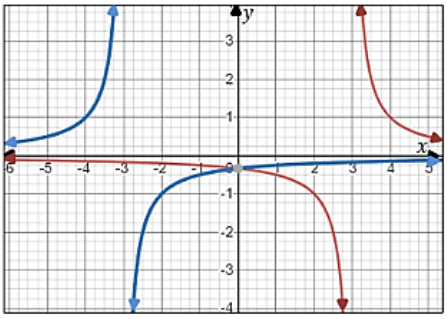
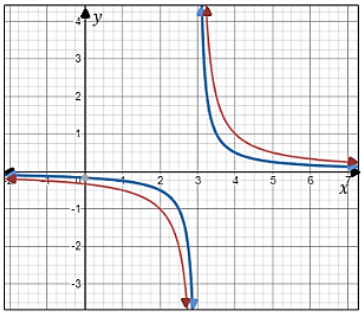
6b Which graph represents a function $f(x)$ and its inverse $g(x)$?

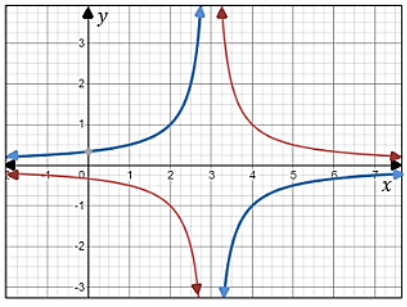
a.



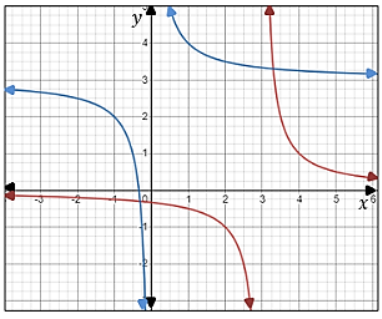
b.



c.



d.



6c) inverse for $g(x) = \frac{3x-5}{2}$ is

a. $g(x) = \frac{2x+5}{3}$

b. $g(x) = \frac{3x+5}{2}$

c. $g(x) = 2x + 5$

d. $g(x) = \frac{2x-5}{3}$

==========

7a) solve : $3x = 3 + \sqrt{18x - 18}$

a. 1

b. 3

c. 1 , 3

d. 4

==========

7b) solve : $-3 = \sqrt{22 - x} - \sqrt{3x - 3}$

a. 12

b. 13

c. 14

d. 15

==========

7c) solve : $4 = \sqrt{-6-2x} + \sqrt{31-3x}$

a. 2

b. 3

c. 4

d. $\emptyset$

==========

8a) the most number of real zeros and turning points recpectivly of $f(x) = x^5 + 3x^4 + 2x^3$

a. 4 , 5

b. 3 , 3

c. 5 , 4

d. 1 , 2

==========

8b) the most number of real zeros and turning points of $f(x) = x^5 + 3x^8 + 2x^3$

a. 2 , 4

b. 7 , 8

c. 8 , 7

d. 6, 5

==========

8c) the real zeros of $f(x) = 4x^8 + 16x^4 + 12$

a. 0 , 4

b. 3 , 2 , -1

c. 0 , $\frac{4}{3}$, -5

d. 3 , 2 , -4

==========

9a) find : $(6x^6 - 3x^5 + 6x^4 - 15x^3 + 2x^2 + 10x - 6) \div (2x - 1)$

a. $3x^5 + 3x^3 - 6x^2 - 2x + 4 - \frac{2}{2x-1}$

b. $3x^5 + 3x^3 - 6x^2 - 2x + 4 + \frac{2}{2x-1}$

c. $3x^5 + 3x^3 - 6x^2 + 2x + 4 - \frac{2}{2x-1}$

d. $3x^5 + 3x^3 - 6x^2 - 2x + 4 - \frac{1}{2x-1}$

==========

9b) find : $\frac{(4x^4-8x^3+12x^2-6x+12)}{2x+4}$

a. $2x^3 - 8x^2 + 22x - 47 - \frac{100}{x+2}$

b. $2x^3 - 8x^2 + 22x - 47 + \frac{100}{x+2}$

c. $2x^3 - 8x^2 + 22x - 47 - \frac{10}{x+2}$

d. $2x^3 - 8x^2 + 22x - 47 - \frac{100}{3x+2}$

==========

10a) the factors of $f(x) = x^4 - 2x^3 - 9x^2 + x + 6$

a. $(x-2)(x^3-4x^2-x+3)$

b. $(x+2)(x^3-4x^2-x+3)$

c. $(x-2)(x^3-4x^2-x-3)$

d. $(x-2)(x^3+4x^2-x+3)$

==========

10b) the factors of $f(x) = 3x^4 - 22x^3 + 13x^2 + 118x - 44$

a. $(3x-1)(x-5)(x-4)(x-2)$

b. $(3x-1)(x-5)(x+4)(x+2)$

c. $(3x+1)(x-5)(x-4)(x+2)$

d. $(3x-1)(x-5)(x-4)(x+2)$

==========

11a) solve : $\frac{x-1}{2x-4} + \frac{x+2}{3x} = 1$

a. 1 , -8

b. -1 , -8

c. 1 , 8

d. -1 , 8

==========

11b) solve : $\frac{4}{x-2} - \frac{2}{x} = \frac{14}{x^2-2x}$

a. 1

b. 4

c. 3

d. 5

12a) solve : $(x+4)(x-2) \leq 0$

a. $(-\infty, -4) \cup (2, \infty)$

b. $[-4, 2]$

c. $(-\infty, 4] \cup [2, \infty)$

d. $(-4, 2)$

==========

12b) solve : $-8x^3 - 30x^2 - 18x < 0$

a. $\left(-3, -\frac{3}{4}\right) \cup (0, \infty)$

b. $(-\infty, -3) \cup (-\frac{3}{4}, 0)$

c. $(-3, -\frac{3}{4})$

d. $[-3, 0]$

==========

12c) $solve:\ 2b^2 + 16 \leq b^2 + 8b$

a. $(0, 4)$

b. $(-\infty, 4)$

c. $(4, \infty)$

d. $\{4\}$

==========

13a) if AED 1000 is invested in an online saving account earning 8% per year compounded continuously. how much will be in the account after 10 years

a. 2225.54

b. 252.54

c. 2522.54

d. 5222.45

==========

13b) find the saved money after 5 years if it is compounded interest annually when P = 500 AED , r = 3%

a. 579.6

b. 597.6

c. 957.7

d. 653.25

==========

13c) ahmed acquired an inheritance of AED 20000 at age 8, but he will not have access to it until he turns 18. if the moey earning 4.6% compounded monthly . how much he inheritance on his 18^{th} birthday

a. 13653.63

b. 31653.63

c. 36153.63

d. 331456.63

==========

14a) evaluate : $log_2 2^3$

a. 1

b. 2

c. 3

d. 4

==========

14b) evaluate : $log_x x^2$

a. 1

b. 2

c. 3

d. 4

==========

14c) evaluate : $4\ln(7 - \sqrt{2}$

a. 8.66

b. 6.88

c. 8.76

d. 6.82

==========

14 d) evaluate : $\log 0.01$

a. 2

b. -2

c. 3

d. 100

15a) solve : $log_8(x^2 + 11) = log_8 92$

a. ± 6

b. ± 9

c. ± 1

d. 6

==========

15b) solve : $log_5 x = log_5(x + 6) - log_5 4$

a. 3

b. 4

c. 2

d. 1

==========

15c) solve to the nearest hundredth $e^{2x+1} = 8$

a. **0.54**

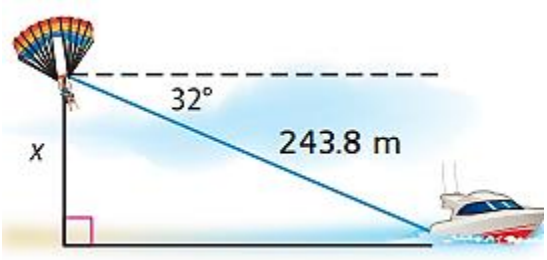
b. **0.55**

c. **0.58**

d. **0.65**

==========

16a) Eiman decided to try parasailing. she was strapped into a parachute towed by a boat. A 243.8 m line connected her parachute to the boat, which was at a 32 angle of depression . how high above the water was Eiman?



a. 143 . 4

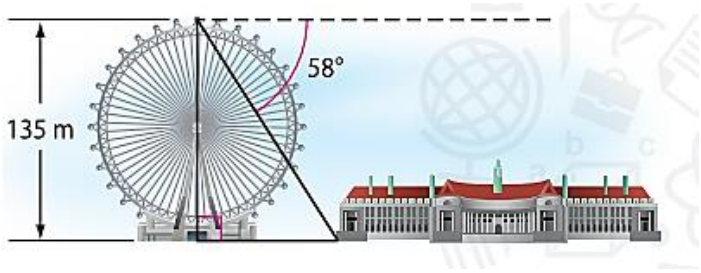
b. 134.4

c. 129.2

d. 132.8

==========

16b) the London eye is a 135m tall. observation wheel. if a passenger at the top sights the London Aquarium at a 58 angle of depression, what is the distance between the aquarium and the London Eye?



a. 84m

b. 83m

c. 48m

d. 120m

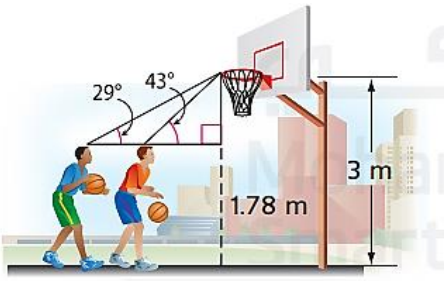
==========

16c) on a roller coaster, 114.3m track ascend at a 55 angle of elevation to the top before the first and highest drop, determine the height of the roller coaster.

a. 93.6m b. 102m

c. 39.6m d. 210m

16d) Both Ahmed and Ali are 1.78m tall, Ahmed looks at a 3m basketball goal an angle of elevation of 29, and Ali 34 angle, if Ali is directly in front of Ahmed, how far apart are the boys standing?



a. 0.6m

b. 0.7

c. 0.8m

d. 0.9m

==========

16e) two ships are spotted from the top of a 47.5m lighthouse. the first ship is at a 27 angle of depression and the second at 7 angle of depression.

what is the distance between the two ships

a. 923.6m

b. 239.6m

c. 293.7m

d. 232.3m

==========

17a) the following angles are coterminal to $\frac{3\pi}{4}$

a. $\frac{10\pi}{4}$.– $\frac{5\pi}{4}$

b. $\frac{9\pi}{4}$.– $\frac{5\pi}{4}$

c. $\frac{11\pi}{4}$.– $\frac{7\pi}{4}$

d. $\frac{11\pi}{4}$.– $\frac{5\pi}{4}$

17b) the positive coterminal NGLE to -670 is

a. 40

b. 45

c. 50

d. 55

==========

17c) all the following angles are coterminal to -75

a. $-75 + 180z$, z *is real number*

b. $-75 + 360z$, z *is integer number*

c. $-75 + 180z$, z *is integer number*

d. $-75 + 360z$, z *is real number*

==========

18a) find : $sin\frac{3\pi}{4}$

a. $\frac{1}{\sqrt{2}}$

b. $\frac{1}{2}$

c. $\frac{\sqrt{3}}{2}$

d. 2

==========

18b) sec(-150)

a. $\frac{2\sqrt{3}}{3}$

b. $\frac{\sqrt{3}}{3}$

b. $-\frac{2\sqrt{3}}{3}$

d. $\frac{2}{3}$

19a) if $sin\theta = \frac{1}{3}$, $\tan\theta < 0$ $find \cot\theta$

a. $\frac{1}{\sqrt{2}}$

b. $-2\sqrt{2}$

c. $\frac{2}{3}$

d. 0

==========

19b) $if \csc\theta = \frac{8}{3}$, $\tan\theta > 0$ $find \cos\theta$

a. $\frac{1}{55}$

b. $\frac{8}{3}$

c. $\frac{\sqrt{3}}{8}$

d. $\frac{\sqrt{55}}{8}$

==========

19c) $if \cos\theta = -\frac{1}{4}$, $\sin\theta < 0$ $find \csc\theta$

a. $\frac{4}{5}$

b. $-\frac{4}{\sqrt{15}}$

c. $\frac{2}{3}$

d. $-\frac{\sqrt{5}}{4}$

==========

20a) the expression : $(\sec^2\theta - 1)\cos^2\theta =$

a. $\cos^2\theta$

b. $\cos\theta$

c. $\sin^2\theta$

d. $\sin\theta$

==========

20b) the expression : $\cot^2\theta\csc^2\theta - \cot^2\theta =$

a. $\cot^2\theta$

b. $\cot\theta$

c. $\tan^4\theta$

d. $\cot^4\theta$

==========

20c) the expression : $\frac{\csc^2\theta - 2\csc\theta - 3}{\csc^2\theta - 1} =$

a. $\frac{\csc\theta + 3}{\csc\theta + 1}$

b. $\frac{\csc\theta - 3}{\csc\theta + 1}$

c. $\frac{\csc\theta + 3}{\csc\theta - 1}$

d. $\frac{\csc\theta + 7}{\csc\theta + 1}$

==========