



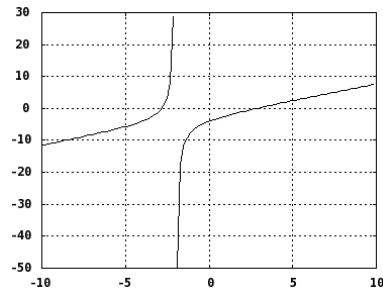
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SFU Calculus Readiness Test Assignment

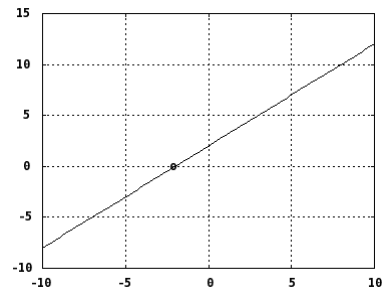
Name: _____

1. Which of the following is the graph of the function $f(x) = \frac{x^2-4}{x+2}$?

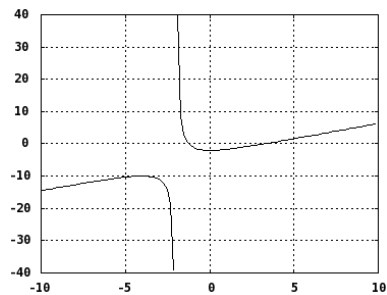
a. See choice a below:



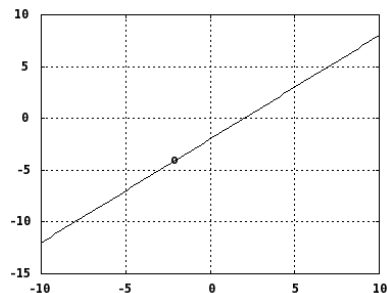
b. See choice b below:



c. See choice c below:



d. See choice d below:



e. None of the above.

2. Simplify $\frac{\sqrt{a^8 b^4}}{a^2 b}$

- a. $a^4 b^2$
- b. $a^2 b$
- c. a^2
- d. $a^6 b^3$
- e. None of the above

3. If $p = \frac{3s-r}{rq}$, solve for the variable r in terms of the other variables p , q , and s .

a. $r = \frac{3s}{2pq}$

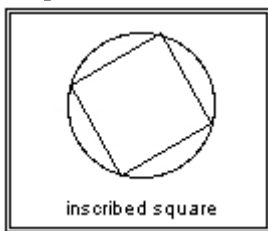
b. $r = \frac{pq+1}{3s}$

c. $r = \frac{3s}{pq+1}$

d. $r = \frac{3s}{pq}$

- e. None of the above

4. A square is inscribed in a circle of radius r . Express the length of the side of the square in terms of r .



a. $r/2$

b. $2r$

c. r

d. $r/\sqrt{2}$

- e. None of the above

5. The area of a right triangle is 17.5 cm^2 . One leg is 2 cm shorter than the other. Find the length of the shortest side.

6. Solve the inequality: $\frac{1}{4} + \frac{1}{3}x > \frac{1}{6} + \frac{2}{3}x$

7. Solve $|2x + 3| > 7$

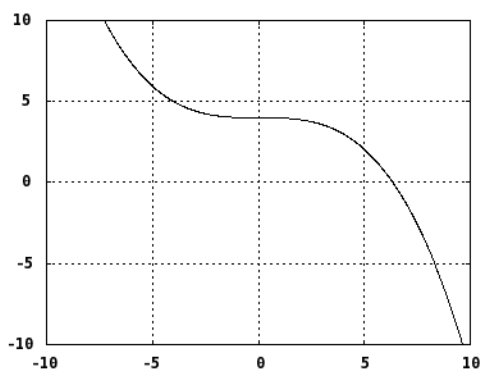
8. Solve $\frac{8}{x-9} - \frac{168}{x^2-81} = 1$

9. If $f(x) = \sin(x) + 3 \cos(2x)$, evaluate $f(\pi)$.

10. As x increases from $\frac{\pi}{4}$ to $\frac{3\pi}{2}$, the value of $\sin(x)$:

- Increases throughout the interval
- Decreases throughout the interval
- Increases at first, then decreases
- Decreases at first, then increases
- None of the above

11. The graph of $y = f(x)$ is shown below:



Rank the following from smallest to largest.

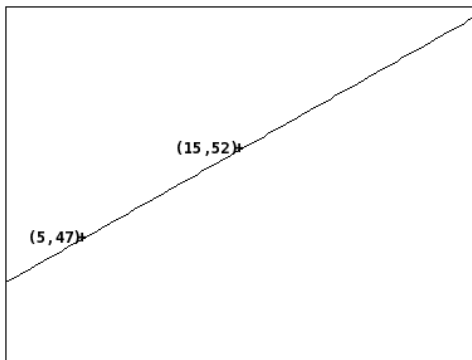
- $f(0)$
- $f^{-1}(0)$
- $f(5)$
- $f^{-1}(5)$

12. If $f(x) = x^2 - 4x$, then $f(x + h) - f(x)$ is equal to:

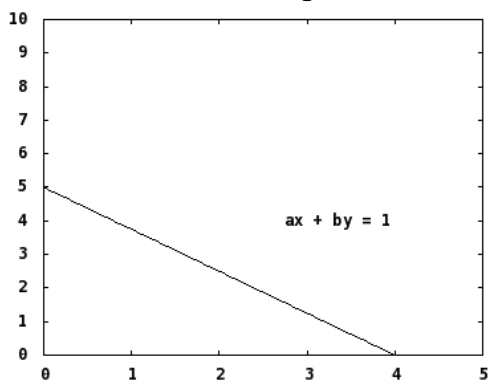
- $h^2 - 4h$
- $f(h)$
- $2hx + h^2 - 4h$
- h
- $2hx + h^2 - 8x + 4h$
- None of the above

13. A test has twenty questions worth 100 points. The test consists of True / False questions worth 3 points each and multiple choice questions worth 11 points each. How many multiple choice questions are there on the test?

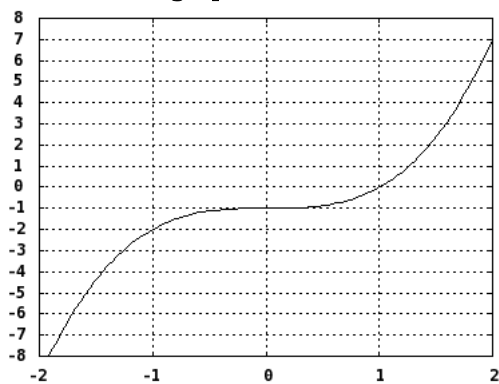
14. A 3 metre long ladder is leaning against a wall so that the top of the ladder is at a height h on the wall. An expression for the distance of the bottom of the ladder from the wall is:
- $\sqrt{h^2 - 9}$
 - $h - 3$
 - $3 - h$
 - $\sqrt{9 - h^2}$
15. The length of a certain rectangle is 3 units more than double its width, w . Express the area of the rectangle in terms of w .
- $A = w(2w + 3)$
 - $A = 2w(2w + 3)$
 - $A = w(w + 3)$
 - $A = 2w(w + 3)$
 - None of the above
16. How many real solutions does the equation $\sqrt{x + 5} = x$ have?
17. Suppose you are given the graph of a function $f(x)$. Which of the following statements about the graph of $f(x + 2)$ is true?
- It is 2 units to the left of the graph of $f(x)$
 - It is 2 units higher than the graph of $f(x)$
 - It is 2 units lower than the graph of $f(x)$
 - It is 2 units to the right of the graph of $f(x)$
 - None of the above.
18. A quadratic polynomial function has zeros at -5 and 4 . If the y -intercept is -60 , then the leading coefficient (i.e. the coefficient of x^2) is what?
19. What is the equation of the line in the figure below?



20. Find a and b from the figure below:



21. Consider the graph of the function $y = f(t)$ below. If $f(z) = -2$ and $f(x) = z$, then find x .



22. Which of the following is equivalent to $\frac{1}{y} + \frac{1}{u}$?

- a. $1/(uy)$
- b. $2/(y + u)$
- c. u/y
- d. $(u + y)/(uy)$
- e. $1/(u + y)$
- f. None of the above

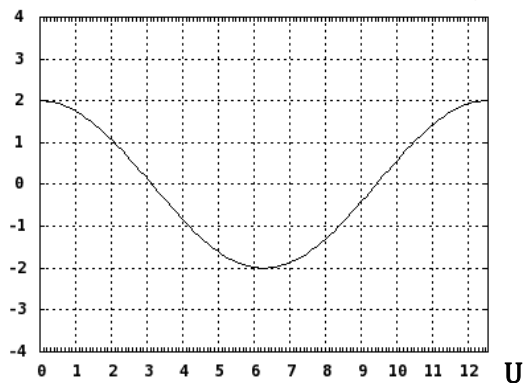
23. If $f(x) = x^2 - 1$ and $g(x) = \sqrt{x} + 1$, then evaluate $(f \circ g)(x)$

- a. $x + 2\sqrt{x}$
- b. x
- c. $|x|$
- d. $\sqrt{x^2 - 1} + 1$
- e. None of the above

24. $4^{2x-1} = 2^x$. Solve x

25. The strength of a cable is proportional to the square of its diameter. If a 2 cm cable will support 800 kg, how much will a 3 cm cable support?

26. What function is represented by the graph below?



- a. $y = 2 \cos \left(\frac{x}{2} \right)$
- b. $y = 2 \cos (2x)$
- c. $y = \cos (2x)$
- d. $y = 2 \cos (x)$

27. Solve for x . $\log_6(x + 7) - \log_6 x = 2$

28. If $\cos x = \frac{\sqrt{3}}{2}$ and $-\frac{\pi}{2} \leq x \leq 0$, then find the exact value of x in radians.

29. What is the value of x if $\log_5 x = -2$?

30. Determine the coordinates of the point (x, y) where the curves $y = \frac{1}{2}x - 5$ and $y = x^2 + 2x - 15$ intersect in the third quadrant.

Answers

1. D
2. B
3. C
4. E
5. 5
6. $x < 1/4$
7. $x < -5$ or $x > 2$
8. $x = 3, x = 5$
9. 3
10. C
11. IV, III, I, II
12. C
13. 5
14. D
15. A
16. 1
17. A
18. 3
19. $y = \frac{1}{2}x + \frac{89}{2}$
20. $a = \frac{1}{4}, b = \frac{1}{5}$
21. 0
22. D
23. A
24. $2/3$
25. 1800 kg
26. A
27. $1/5$
28. $-\pi/6$
29. $1/25$
30. $(-4, -7)$