

- 2 1.  $\sqrt{x^2 + 9} = x + 3$  True  
False
- 2 2.  $x^2(x + 2)^3 = (x^3 + 2x^2)^3$  True  
False
- 2 3.  $\sin x^2$  is the same as  $\sin^2 x$  True  
False
- 2 4. The x intercept for the line represented by the equation  $3x + 4y - 7 = 0$  is
- a.  $\left(\frac{7}{3}, 0\right)$
  - b.  $\left(0, \frac{7}{3}\right)$
  - c.  $\left(-\frac{7}{3}, 0\right)$
  - d.  $\left(\frac{7}{4}, 0\right)$
  - e.  $\left(0, -\frac{7}{3}\right)$
- 2 5.  $(\cos x)^2$  is the same as  $\cos^2 x$  True  
False

6.  $\frac{1}{\sin x}$  is the same as  $\arcsin x$  True

Note:  $\arcsin x$  means the inverse function. False

7.  $\frac{\sin x^2}{x} = \sin x$  True

False

8.  $\frac{(x+2)^2 + 2}{x+2} = (x+2) + 2$  True

False

9.  $\frac{x+y+1}{1+x+y} = 1$  True

False

10.  $\frac{x+2}{x-2} = -1$  True

False

11.  $\frac{x-2y-z}{z+2y-x} = -1$  True

False

12.  $\frac{1}{2\sqrt[3]{x}}$  is the same as

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

b.  $2x^{\frac{1}{3}}$

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

d.  $\frac{x^{\frac{1}{3}}}{2}$

13.  $(x^2 + y)^2 = x^4 + y^2$  True  
False

14.  $\frac{\tan 3x}{3} = \tan x$  True  
False

15. If simplified the expression  $(16c^6d^{10})^{\frac{1}{2}}$  is equivalent to:

a.  $4c^3d^5$

b.  $8c^3d^5$

c.  $4c^{6.5}d^{10.5}$

d. None of the above

16. If simplified the expression  $(2c^{-8}d^3)^3$  is equivalent to:

- a.  $6c^{-24}d^9$
- b.  $6c^{-5}d^6$
- c.  $8c^{-5}d^6$
- d.  $8c^{-24}d^9$
- e. None of the above

3 17.  $f(x) = x^2 + 2x$  then  $f(x+1)$  is

- a.  $x^2 + 4x + 3$
- b.  $x^2 + 4x$
- c.  $x^2 + 2x + 3$
- d.  $x^2 + 4x + 4$
- e.  $x^2 + 4x + 2$

2 18.  $\frac{2x}{3x-1} = \frac{5}{7}$  then x is

- a. 2
- b. 3
- c. 4
- d. 5
- e. 6

3 19. In factored form  $2R(R+r) - (R+r)^2$  is  $(R+r)(R-r)$

True

False

20. When simplified  $\sqrt{3x+1} - \frac{x-2}{\sqrt{3x+1}}$  is:

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

b.  $\frac{2x+3}{\sqrt{3x+1}}$

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

d.  $\frac{4x+3}{\sqrt{3x+1}}$

21. When simplified  $\frac{r}{1 + \frac{r-s}{r+s}}$  is:

a.  $\frac{r+s}{1+r-s}$

b.  $\frac{r(r+s)}{1+r-s}$

c.  $\frac{2r^2}{r+s}$

d.  $\frac{r+s}{2}$

22. When adding  $\frac{x}{x+2} + \frac{3x}{x-4}$  the answer is:

a.  $\frac{x^2 - x}{x^2 - 4}$

b.  $\frac{4x^2 + 2x}{x^2 - 8}$

c.  $\frac{4x^2 - 2x}{x^2 - 2x - 8}$

d.  $\frac{2x(2x+1)}{x^2 - 2x - 8}$

23. Perform the operation and simplify.  $\frac{2}{3x^2} + \frac{5}{x}$

- a.  $\frac{2+15x^2}{3x^2}$
- b.  $\frac{17}{3x}$
- c.  $\frac{2+15x^2}{3x^3}$
- d.  $\frac{15x+2}{3x^2}$

24. Circle the expression which is true.

- a.  $\frac{1}{\sqrt[3]{x^2}} = x^{\frac{3}{2}}$
- b.  $\frac{1}{\sqrt[3]{x^2}} = x^{-\frac{3}{2}}$
- c.  $\frac{1}{\sqrt[3]{x^2}} = x^{\frac{2}{3}}$
- d.  $\frac{1}{\sqrt[3]{x^2}} = x^{-\frac{2}{3}}$

25. The algebraic expression  $\frac{5x^2 + 3x}{2zx^2 + y + 4}$  can be simplified to  $\frac{5 + 3x}{2z + y + 4}$

- a. True
- b. False

26. Circle the correct answer

- a.  $(\sin 2x)^2 = \sin^2 4x^2$
- b.  $(\sin 2x)^2 = \sin^2 4x$
- c.  $(\sin 2x)^2 = \sin^2 2x$
- d.  $(\sin 2x)^2 = \sin 4x^2$

27. The fraction  $\frac{\frac{x}{y}}{z}$  is the same as :
- $\frac{xz}{y}$
  - $\frac{x}{yz}$
  - none of the above
28. The fraction  $\frac{\frac{x}{y}}{z}$  is the same as :
- $\frac{xz}{y}$
  - $\frac{xy}{z}$
  - none of the above
29. Circle the expression which is true:
- $4x^2 + 6y + 5x^{-3} = \frac{4x^2 + 6y}{5x^3}$
  - $4x^2 + 6y + 5x^{-3} = \frac{4x^5 + 6x^3y + 5}{x^3}$
  - $4x^2 + 6y + 5x^{-3} = \frac{4x^2 + 6y + 5}{x^3}$
  - none of the above
30. The y intercept of the graph represented by  $4x - 5y + 8 = 0$  is
- (0, 1.6)
  - (0, -2)
  - (0, 2)
  - (1.6, 0)
  - (2, 0)

31. The expression  $\frac{3x^5y^2}{2x^{-2}y^4}$  when simplified is:

a.  $\frac{6x^3}{y^2}$

b.  $\frac{3x^7}{2y^2}$

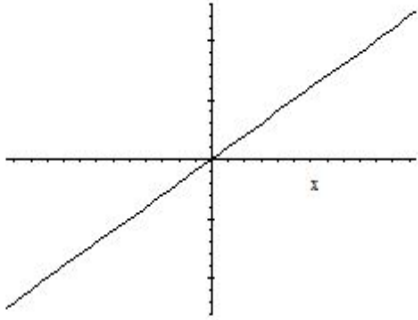
c.  $\frac{3x^3}{2y^2}$

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

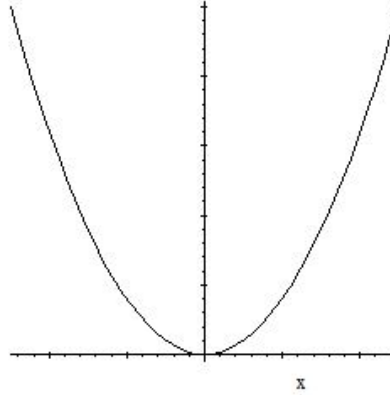


The following questions are based on the graphs shown.

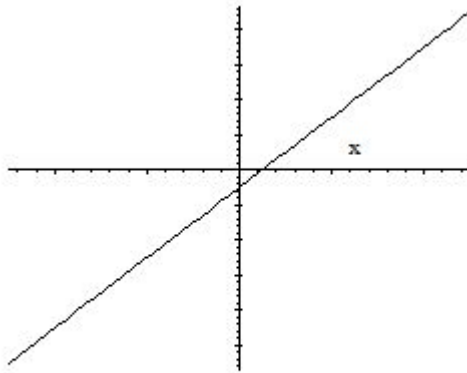
Please examine the graphs carefully before answering the questions.



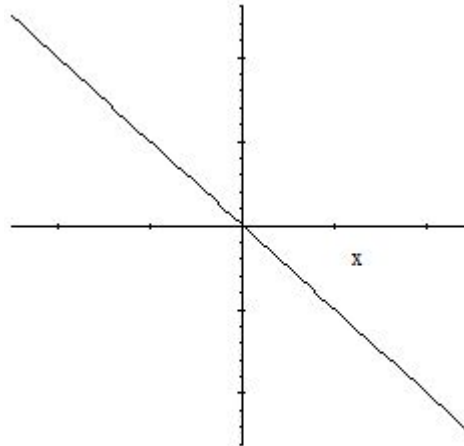
Graph 1



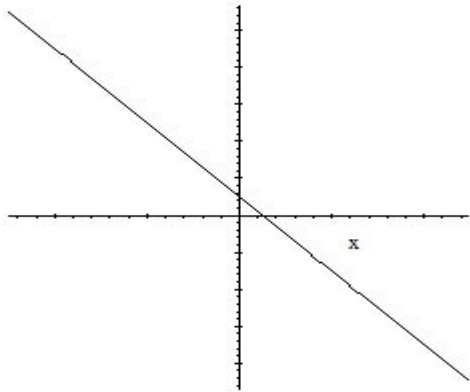
Graph 2



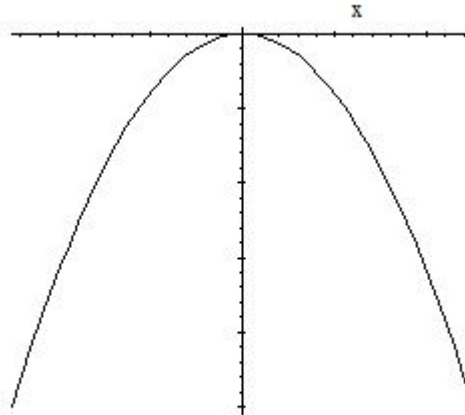
Graph 3



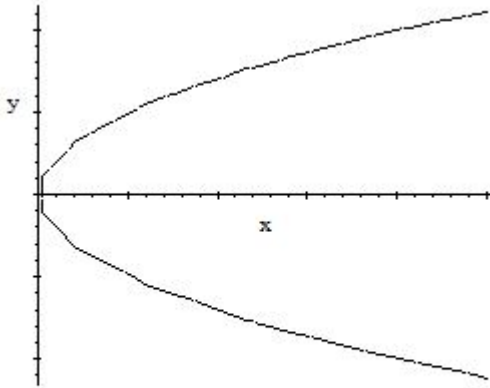
Graph 4



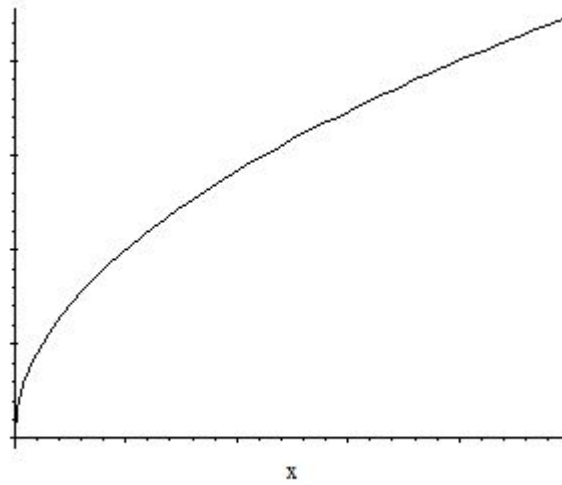
Graph 5



Graph 6



Graph 7



Graph 8

32. The graph of  $y = \sqrt{x}$  is represented by

- a. Graph 1
- b. Graph 2
- c. Graph 3
- d. Graph 4
- e. Graph 5
- f. Graph 6
- g. Graph 7
- h. Graph 8

33. The graph of  $y = x$  is represented by

- a. Graph 1
- b. Graph 2
- c. Graph 3
- d. Graph 4
- e. Graph 5
- f. Graph 6
- g. Graph 7
- h. Graph 8

34. The graph of  $y = x^2$  is represented by

- a. Graph 1
- b. Graph 2
- c. Graph 3
- d. Graph 4
- e. Graph 5
- f. Graph 6
- g. Graph 7
- h. Graph 8

35. Solve for  $x$  the equation  $(x-1)x = 2x^2$

- a.  $x = -2$  and  $x = 0$
- b.  $x = 1$  and  $x = 0$
- c.  $x = -3$  and  $x = -1$
- d.  $x = -1$  and  $x = 0$
- e.  $x = -1$  and  $x = 1$

## Answer Key

- |           |           |           |
|-----------|-----------|-----------|
| 1. False  | 13. False | 25. False |
| 2. False  | 14. False | 26. C     |
| 3. False  | 15. A     | 27. B     |
| 4. A      | 16. D     | 28. A     |
| 5. True   | 17. A     | 29. B     |
| 6. False  | 18. D     | 30. A     |
| 7. False  | 19. True  | 31. B     |
| 8. False  | 20. B     | 32. G     |
| 9. True   | 21. D     | 33. A     |
| 10. False | 22. D     | 34. B     |
| 11. True  | 23. D     | 35. D     |
| 12. D     | 24. D     |           |

If you get less than 25 out of 35 correct answers, you might find refreshing your math skills helpful before starting your program at SAIT. To find out more about how to refresh your math skills please contact:

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