

**COLLEGE ALGEBRA PRACTICE TEST**

This test consists of 26 questions. While you may take as much as you wish, it is expected that you are able to complete it in about 45 minutes.

For proper course placement, please:

- Take the test seriously and honestly
- Do your own work without any assistance. Do not use any reference materials, calculator, or any other computing aid
- Do not guess. If you don't know how to work a problem, leave the answer blank.

1. Simplify:  $\frac{t^2 - 2t}{t^2 - t - 2}$

A)  $\frac{1}{t-2}$  B)  $\frac{2}{t-3}$  C)  $\frac{t}{t+1}$  D)  $\frac{3}{2t+43}$  E)  $\frac{4}{5t+1}$

2.  $(r^7 s^5)(6r^3 s) =$

A)  $-12 r^5 s^5$  B)  $4r^{10} s^6$  C)  $6r^{10} s^6$  D)  $4r^{19} s^6$  E)  $4r^{10} s^3$

3. Simplify:  $(\frac{16}{25})^{-\frac{1}{2}}$

A)  $5/4$  B)  $-4$  C)  $6$  D)  $1/5$  E)  $3$

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

A)  $4x^2 + 4x + 1$  B)  $16x^2 - 24x + 9$  C)  $16x^2 + 5x + 1$  D)  $5x^2 + 4x + 9$  E)  $4x^2 + 3x + 1$

5. Factor:  $(1+x)^2 x^3 e^{-2x} + 5x e^{-2x} (1+x)$

A)  $e^{-2x}(x^2 + 5)(x+1)$  B)  $x e^{-2x}(x^2 + 4)$  C)  $x e^{-2x}(2x^2 + 5)$  D)  $x e^{-2x}(1+x)(x^3 + x^2 + 5)$   
E)  $4 x e^{-2x}(x^2 + 5)(x-1)$

6. Expand:  $(x^3 + 3)(\frac{2}{x} - 1)$ :

A)  $2x^2 + 2x + 1$  B)  $2x^3 + x^2 + \frac{2}{x} + 1$  C)  $2x^2 - x^3 + \frac{6}{x} - 3$  D)  $2x + x^2$  E)  $\frac{2}{x} + 1$

7. Simplify:  $\sqrt{(2t+3)^2 + (32t^2 - 8)}$

A)  $6t+1$  B)  $6t-1$  C)  $5t+1$  D)  $5t^2 + 1$  E)  $10t^2 + 2t + 1$

8.  $\frac{2}{y+1} + \frac{1}{y-1} =$

- A)  $\frac{3y}{(y+1)(y-1)}$  B)  $\frac{3y-1}{(y+1)(y-1)}$  C)  $\frac{3y}{(y+2)(y-1)}$  D)  $\frac{3y+1}{(y+1)(y+2)}$   
 E)  $\frac{4y-1}{(y+1)(y-1)}$

9.  $\frac{5y}{x - \frac{1}{y^2}} =$

- A)  $\frac{5y^3}{x y^2 - 1}$  B)  $\frac{5xy}{x^2 y - 2}$  C)  $\frac{5xy}{x^2 y + 1}$  D)  $\frac{5y^3}{2x^2 y - 1}$  E)  $\frac{4xy}{x^2 y - 1}$

10. The expression  $\frac{3^n x^{n+2}}{n 4^n x}$  simplify to

- A)  $\frac{4}{xn}$  B)  $\frac{3x}{4n}$  C)  $\frac{3}{x^3 n}$  D)  $\frac{3x^{n-1}}{4n^2}$  E)  $(\frac{3}{4})^n \frac{x^{n-1}}{n}$

11. Solve the equation  $2(x-1)-(3x-2)=6$ .

- A) -11 B) -6 C) +4 D) 0 E) 33

12. Solve the equation  $x^3 - x^2 - 2x = 0$ .

- A)  $x=0,-1$  B)  $x=2,0,-1$  C)  $x=-4,0,2$  D)  $x=1,2,3$  E)  $x=33$

13. Solve the equation  $4x-5z=6xy^2-zx$  for  $z$ .

- A)  $\frac{4x-6xy^2}{5-x}$  B)  $\frac{4x-6xy}{6x-5}$  C)  $\frac{4x-6xy^2}{6x-4}$  D)  $\frac{x-6xy}{7x-5}$  E)  $\frac{4x-6xy^2}{6x+5}$

14. If  $\begin{matrix} 2x+4y=0 \\ 3x+7y=12 \end{matrix}$

then

- A)  $x=-15$  B)  $x=2$  C)  $x=+34$  D)  $x=1$  E)  $x=-24$

15. Solve the equation  $\frac{2}{x-2} + \frac{1}{1-2x} = 0$

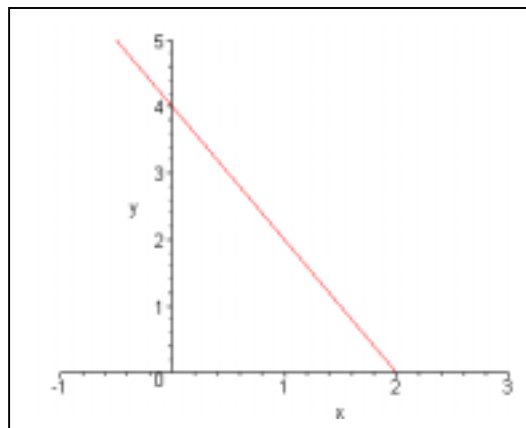
- A)  $\frac{-1+34}{3}$  B)  $\frac{1+\sqrt{21}}{2}$  C) 0 D) 1 E)  $\frac{-1-\sqrt{21}}{2}$

16. The inequality  $x^2 + 3x + 2 < 0$  is equivalent to

- A) x cannot be equal to -2 B)  $x < -2$  C)  $x > -4$  D)  $-2 < x < -1$  E)  $x > -2$

17. Write an equation for the line shown in the following picture.

- A)  $y = 2x - 3$   
 B)  $y = -2x + 4$   
 C)  $y = 5 + x$   
 D)  $y = 4x - 3$   
 E)  $y = 5x - 3$

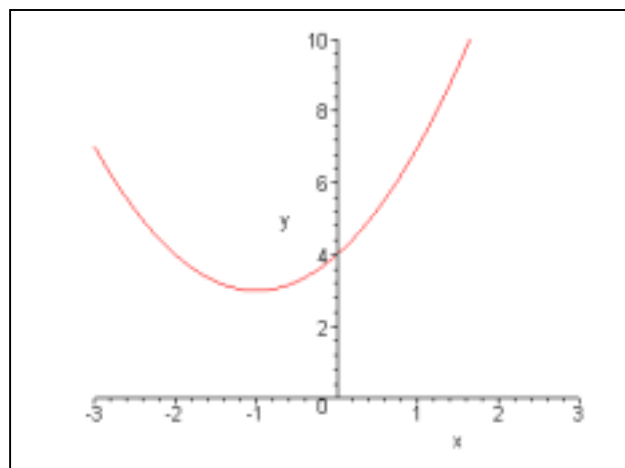


18. Which of the following is an equation of the line with slope -4 through the point (1,2)?

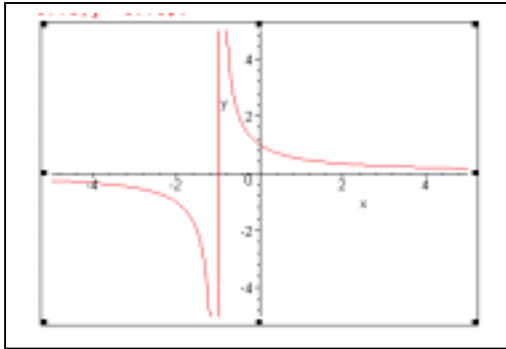
- A)  $y - 2 = -4(x - 1)$  B)  $y - 4 = 4(x + 1)$  C)  $y - 5 = 3(x - 9)$  D)  $y + 4 = 4(x - 9)$  E)  $y - 2 = 3(x - 9)$

19. Which of the equations represents the following graph?

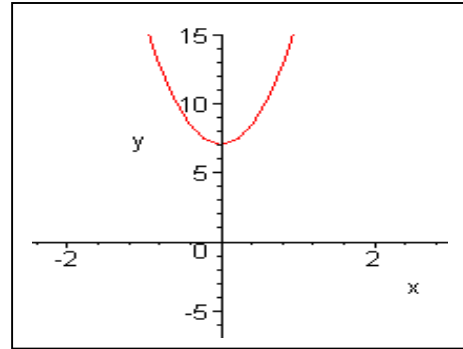
- A)  $x^2 + 8$   
 B)  $2(x - 1)^2 + 4$   
 C)  $x^2 + 4$   
 D)  $2x^2 + 3x + 4$   
 E)  $(x + 1)^2 + 4$



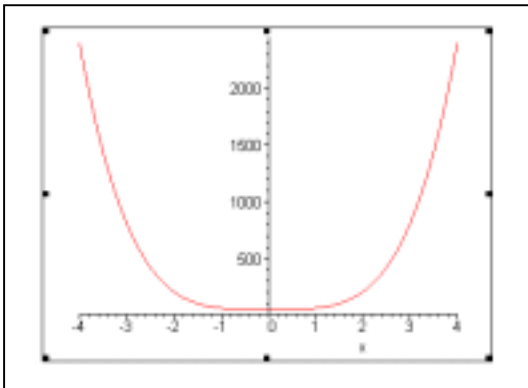
20) Which of the following best represents the graph of  $1/(x+1)^2$  ?



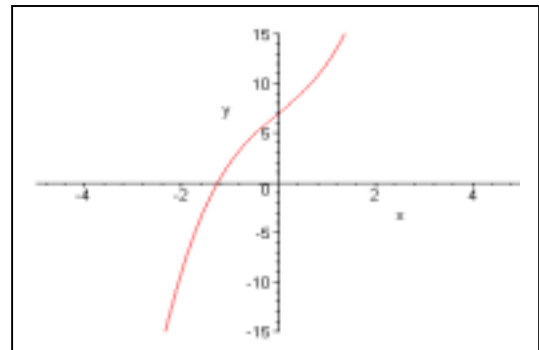
A)



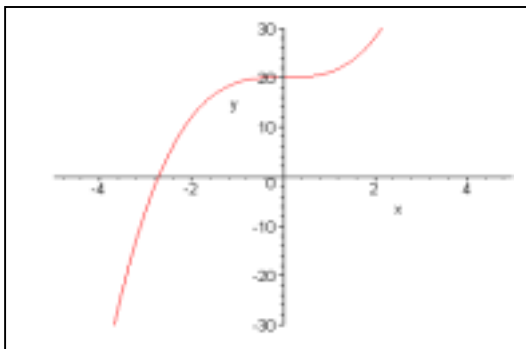
B)



C)



D)



E)

21. Let  $f(x)=(x+1)^3$  and let  $g(x)=3x^2+1$ , find the value of  $g(f(1))$ .

A) 112 B) 193 C)-194 D) 111 E) 331

22. Find  $\frac{f(x) - f(1)}{x - 1}$ , if  $f$  is the function defined by  $f(x) = 1 - 2x$ .

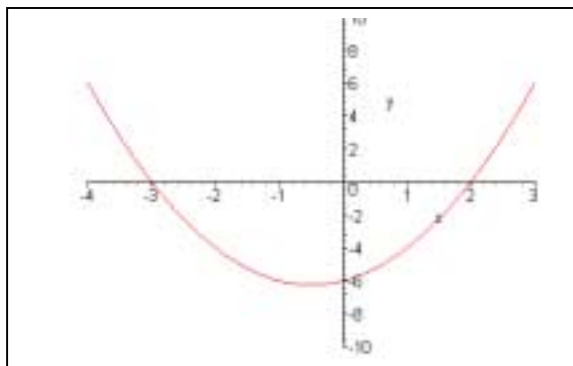
- A)  $x+1$  B) 1 C) 2 D)  $x-2$  E) -2

23. A rectangle of width  $W$  and length  $L$  has area 60 square inches. Express the perimeter,  $P$ , of the rectangle as a function of the rectangle's width.

- A)  $WL=200$  B)  $P=w+L$  C)  $P=3W+1000/W$  D)  $P=2W+120/W$  E)  $P=2W-1000/W^2$

24. When is  $f(x) < 0$  for the function  $f$  whose graph is the parabola given in the following figure ?

- A)  $-3 < x < -1$   
B)  $4 < x < 3$   
C)  $x > 0$   
D)  $-3 < x < 2$   
E)  $x > -7$



25. Find the value of  $3e^{2\ln 3}$ .

- A) 27 B) 4 C) 28 D) 30 E) 3

26. Solve the equation  $3e^{2x+4} = e^4$ .

- A)  $-\ln 3/2$  B)  $-\ln 3$  C)  $(\ln 3 - 5)/3$  D)  $1/5$  E)  $(\ln 3 - 6)/3$

1. C
2. C
3. A
4. B
5. D
6. C
7. A
8. B
9. A
10. E
11. B
12. B
13. A
14. E
15. C
16. D
17. B
18. A
19. E
20. A
21. B
22. E
23. D
24. D
25. A
26. A