Trig Practice 1

Name _____

_____1. What is the horizontal asymptote of $y = \frac{2x^3 + 5}{3x^2 + 1}$?

A. y = 0 B. $y = \frac{2}{3}$ C. y = 1 D. No horizontal asymptote

_____2. What is the vertical asymptote of $y = \frac{2x^3 + 5}{x + 4}$?

A. x = 4 B. x= -4 C. x = 2 D. No vertical asymptote

_____3. What is $\frac{\pi}{6}$ radians in degree measurement?

A. 10° B. 30° C. 45° D. 60°

_____4. On a unit circle what point is associated with $\frac{5\pi}{6}$?

A. $\left(-\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$ B. $\left(-\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$ C. $\left(\frac{1}{2}, -\frac{\sqrt{3}}{2}\right)$ D. $\left(\frac{\sqrt{3}}{2}, -\frac{1}{2}\right)$

_____5. What is 18° in radians.

A. $\frac{\pi}{5}$ B. $\frac{\pi}{10}$ C. $\frac{\pi}{20}$ D. $\frac{\pi}{30}$

_____6. In which quadrant is $\frac{4\pi}{3}$?

A. I B. II C. III D. IV

_____7. Solve for n: 4(2n + 5) + 2(3n + 5) = 10n + 22

A. n = -4 B. n = $\frac{1}{2}$ C. n = -2 D. n = 2

_____8. Simplify $\frac{n^2 + 4n + 3}{n^2 + 7n + 12}$

A. $\frac{n+3}{n+4}$ B. $\frac{1}{n+4}$ C. $\frac{1}{3n+4}$ D. $\frac{n+1}{n+4}$

_____9. Simplify $\frac{n^2 - 16}{n^2 + n - 20}$

A. $\frac{n-4}{n-5}$ B. $\frac{n+4}{n-5}$ C. $\frac{n+4}{n+5}$ D. Doesn't simplify

_____10. Perform the following division $n+4\overline{)n^2+5n+2}$

A. $n+9+\frac{-34}{n+4}$ B. $n+1+\frac{-2}{n+4}$ C. $n+1+\frac{6}{n+4}$ D. $n+9+\frac{38}{n+4}$

_____11. $\left(\frac{2}{3}\right)^{-3}$ **NO CALCULATOR ALLOWED!**

A. $\frac{6}{27}$ B. $\frac{8}{27}$ C. $\frac{27}{8}$ D. $-\frac{8}{27}$

_____12. Factor $16a^4b^2+20ab^5$

A. $ab^2(16a^3 + 20b^3)$ B. $ab(16a^3b + 20b^4)$
C. $4ab^2(4a^3 + 5b^3)$ D. None of the above

_____13. Factor $8n^3 + 125$

A. $(2n + 5)(4n^2 + 10n + 25)$ B. $(2n – 5)(4n^2 + 10n + 25)$
C. $(2n + 5)(4n^2 – 10n + 25)$ D. $(2n – 5)(8n^2 + 10n + 25)$

_____14. Which set of points would be a function?

A. (2, 6), (3, 4), (2, 10) B. (1, 1), (2, 2) (1, 3)
C. (1, 9), (2, 9), (5, 9) D. None are functions

_____15. If $f(x) = 2x^2 – 4$, what is f(2)?

A. 2 B. 4 C. 8 D. 12

_____16. If $f(x) = 3x – 10$ and $g(x) = 2x + 1$, what is f(g(x))?

A. 6x – 19 B. 6x – 13 C. 6x + 13 D. 6x – 7

_____17. What is the domain of $f(x) = \frac{x^3}{x-3}$?

A. $x \neq 3$ B. $x > 3$ C. $x \geq 3$ D. None of the above

_____18. What is the domain of $f(x) = x^2 – 4$?

A. $x \neq 2$ B. $\mathbb{R}$ C. $x \geq 2$ D. $x > 2$

_____19. $\sum_{n=-2}^{1} 2n-1$?

A. -10 B. -9 C. -8 D. -6

_____20. What is the slope from (1, 4) to (3, 10)?

A. 6 B. 2 C. 3 D. -2

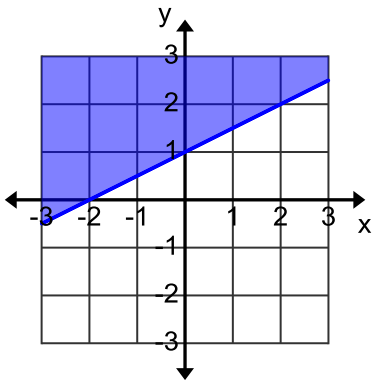
_____21. What is the distance from (n, 3) to (n + 2, 7)?

A. $2\sqrt{5}$ B. $5\sqrt{2}$ C. $5\sqrt{3}$ D. $3\sqrt{2}$

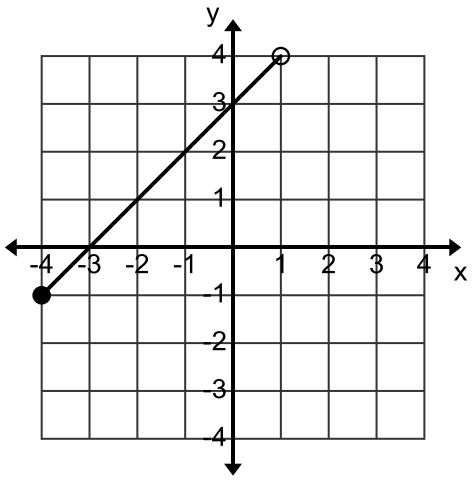
_____22. Which is the equation that is parallel to y = 5x – 2 and goes through (1, 1)?

A. 5x – y = 4 B. 5x – 2y = 3 C. 5x + y = 6 D. -5x – y = -6

_____23. What inequality is graphed below?



A. $y = \frac{1}{2}x + 1$ B. $y \geq \frac{1}{2}x + 1$ C. $y < \frac{1}{2}x + 1$ D. $y > \frac{1}{2}x + 1$



_____24. What is the **domain** of the graph above?

A. $\mathbb{R}: -1 < x \leq 4$ B. $\mathbb{R}: -1 \leq x < 4$ C. $\mathbb{R}: -4 < x \leq 1$ D. $\mathbb{R}: -4 \leq x < 1$

_____25. What is the **range** of the graph above?

A. $\mathbb{R}: -1 < y \leq 4$ B. $\mathbb{R}: -1 \leq y < 4$ C. $\mathbb{R}: -4 < y \leq 1$ D. $\mathbb{R}: -4 \leq y < 1$

_____26. What is the equation of the line tangent to the graph of $f(x) = 2x^3 + 5x - 6$ at the point (1, 1)?

A. y = 11x – 10 B. y = 7x – 6 C. y = 11x + 7 D. y = 7x – 1

_____27. What is the equation of the line in standard form that is parallel to y = 8x – 5 and passes through the point (1, 20).

A. 8x + y = 12 B. 8x – y = -12 C. 12x – y = -8 D. 8x – 12 = y

_____28. Give the equation of the line in standard form that is perpendicular to $5x - 4y = 2$ and passes through the point (6, 7).

A. $4x - 5y = -11$ B. $5x + 4y = 58$ C. $4x + 5y = 59$ D. $7x + 2y = 53$

_____29. What is the value of y in System $\begin{cases} 2x + 3y = 8 \\ 4x + 2y = 12 \end{cases}$

A. y = 1 B. y = 2 C. y = 7 D. None of the above

$A = \begin{bmatrix} 2 & 3 \\ 2 & 4 \end{bmatrix}$ $B = \begin{bmatrix} 3 & -2 \\ -1 & -4 \end{bmatrix}$ $C = \begin{bmatrix} 2 & 3 \\ 5 & 9 \end{bmatrix}$ $D = \begin{bmatrix} 2 & 3 & 1 \end{bmatrix}$ $E = \begin{bmatrix} 3 \\ 4 \\ 2 \end{bmatrix}$

_____30. What is AB? **NO CALCULATOR ALLOWED!**

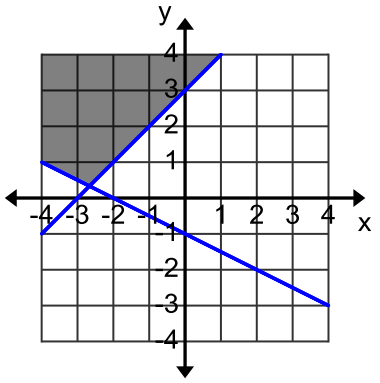
A. $\begin{bmatrix} 3 & -8 \\ 2 & -20 \end{bmatrix}$ B. $\begin{bmatrix} 3 & -16 \\ 2 & -12 \end{bmatrix}$ C. $\begin{bmatrix} 6 & -6 \\ -2 & -16 \end{bmatrix}$ D. None of the above

_____31. What is 3A? **NO CALCULATOR ALLOWED!**

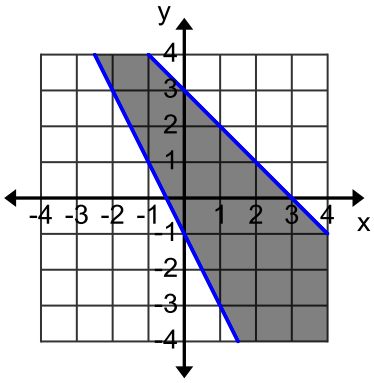
A. $\begin{bmatrix} 6 & 9 \\ 6 & 12 \end{bmatrix}$ B. $\begin{bmatrix} 6 & 9 \\ 6 & 15 \end{bmatrix}$ C. $\begin{bmatrix} 6 & 9 \\ 8 & 12 \end{bmatrix}$ D. None of the above

_____32. What is DE?

A. [20] B. $\begin{bmatrix} 3 & 9 \\ 6 & 10 \end{bmatrix}$ C. $\begin{bmatrix} 6 & 12 & 2 \end{bmatrix}$ D. None of the above



A.



B.

_____33. In graph A above, what system of inequalities is graphed? **NO CALCULATOR ALLOWED!**

A. $\begin{cases} y \geq x+3 \\ y \geq -\frac{1}{2}x-1 \end{cases}$ B. $\begin{cases} y \leq x+3 \\ y \leq \frac{1}{2}x-1 \end{cases}$ C. $\begin{cases} y \leq x+3 \\ y \geq -\frac{1}{2}x-1 \end{cases}$ D. $\begin{cases} y \geq x+3 \\ y \geq \frac{1}{2}x-1 \end{cases}$

_____34. In graph B above, what system of inequalities is graphed? **NO CALCULATOR ALLOWED!**

A. $\begin{cases} y \leq -x+3 \\ y \leq -2x-1 \end{cases}$ B. $\begin{cases} y \leq -x+3 \\ y \leq 2x-1 \end{cases}$ C. $\begin{cases} y \leq x+3 \\ y \geq -2x-1 \end{cases}$ D. $\begin{cases} y \leq -x+3 \\ y \geq -2x-1 \end{cases}$

Figure 1

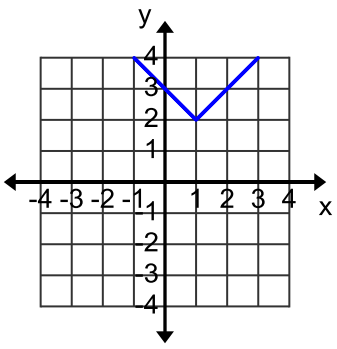


Figure 2

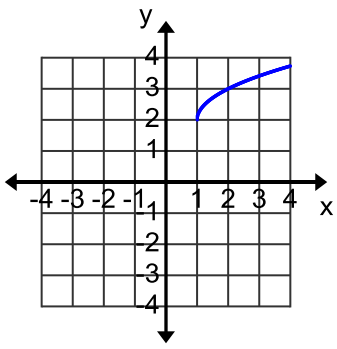
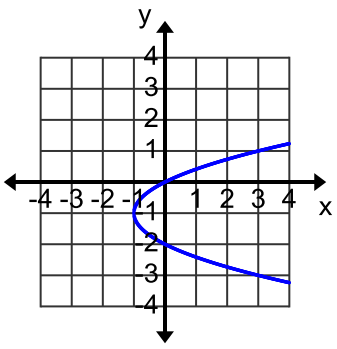


Figure 3



NO CALCULATOR ALLOWED on 35 - 37!

_____35. What equation is graphed in figure 1 above.

A. $y = |x-1|-2$ B. $y = |x+1|+2$ C. $y = |x-1|+2$ D. $y = |x-1|^2+2$

_____ 36. What equation is graphed in figure 2 above.

A. $y = \pm\sqrt{x+1}+2$ B. $y = \sqrt{x+1}+2$ C. $y = \pm\sqrt{x-1}-2$ D. $y = \sqrt{x-1}+2$

_____37. What equation is graphed in figure 3 above.

A. $y = \pm\sqrt{x+1}-1$ B. $y = -\sqrt{x+1}-1$ C. $y = \sqrt{x+1}-1$ D. $y = \pm\sqrt{x-1}-1$

_____38. Simplify $(x - 1)(x^2 + 2x + 3)$

A. $x^3 + x^2 + x - 3$ B. $x^3 + 2x^2 + x - 3$

C. $x^3 + x^2 - x - 3$ D. $x^3 + x^2 + 2x - 3$

_____39. Simplify $(2n^3 + 5n)(4n^3 + 2n)$

A. $8n^6 + 24n^4 + 10n^2$ B. $8n^9 + 24n^4 + 10n^2$

C. $8n^6 + 20n^3 + 10n$ D. $8n^9 + 24n^3 + 10n^2$

_____40. Simplify $(2n^3)^3$

A. $6n^6$ B. $6n^9$ C. $8n^6$ D. $8n^9$

_____41. Simplify $\sqrt{20a^3y^{10}}$

A. $2ay^5\sqrt{5ay}$ B. $5ay^5\sqrt{2a}$ C. $2ay^5\sqrt{5a}$ D. $5ay^5\sqrt{2ay}$

_____42. Simplify $\sqrt[3]{x^4y^{10}}$

A. $xy^4\sqrt[3]{xy}$ B. $xy^3\sqrt[3]{xy^2}$ C. $xy^3\sqrt[3]{xy}$ D. $xy\sqrt[3]{y}$

_____43. Factor $x^2 + x - 30$

A. $(x + 6)(x - 5)$ B. $(x - 6)(x + 5)$ C. $(x - 10)(x + 3)$ D. None of the above

_____44. What is the derivative of $f(x) = 4x$

A. 4 B. $4x^2$ C. 0 D. Doesn't exist

_____45. What is the slope of the line tangent to $f(x)= 5x^3 - 2x^2 + 5$ at the point (1, 8)?

A. 4 B. 7 C. 12 D. None of the above

_____46. What is the equation of the line tangent to the graph of $f(x) = 3x^3 + x$ at the point (1, 4)?

A. $y = 10x - 10$ C. $y = 10x - 5$ E. $y =10 x - 4$

B. $y = 10x + 1$ D. $y = 10x - 6$ H. None of the above

_____47. Find the x-intercept(s) of $f(x) = x^2 - 7x + 6$

A. (0, 6) B. (-6, 0) C. (6, 0) (1, 0) D. (1,0) (-6, 0) E. (0, 1) (0, 6)

_____48. What is the derivative of $f(x) = \frac{5}{x^6} + \frac{3}{x^2}$?

A. $\frac{-30}{x^5} - \frac{6}{x^3}$ B. $\frac{30}{x^7} + \frac{6}{x^3}$ C. $\frac{-30}{x^5} - \frac{6}{x^2}$ D. $\frac{-30}{x^7} - \frac{6}{x^3}$

_____49. If $f(x) = 6x - 8$, what is $f(2x + 4)$

A. $12x + 6$ B. $12x + 16$ C. $12x - 12$ D. $12x + 12$

_____50. If $g(x) = 5x^2$, what is $g(g(x))$?

A. $25x^2$ B. $125x^2$ C. $25x^4$ D. $125x^4$