Transformations of Parent Functions
CUIN 7333

I. Answer the following: a) name the parent function b) state the vertical stretch or compression **c)** reflection? d) state the phase shift e) state the vertical shift **f)** state the domain **g)** state the range **h)** graph the function

1. $y = -2(x+1) - 3$

a. _____

b. _____

c. _____

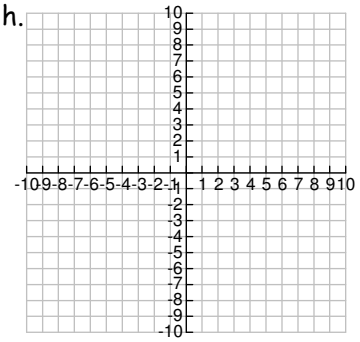
d. _____

e. _____

f. _____

g. _____

h.



2. $y = -\frac{1}{3}|x-2| - 3$

a. _____

b. _____

c. _____

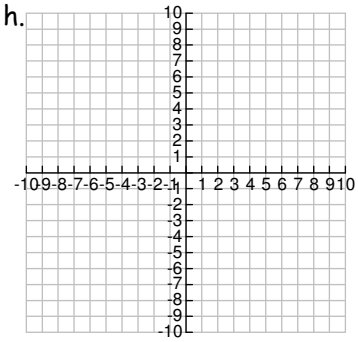
d. _____

e. _____

f. _____

g. _____

h.



3. $y = 2(x+4)^2 + 2$

a. _____

b. _____

c. _____

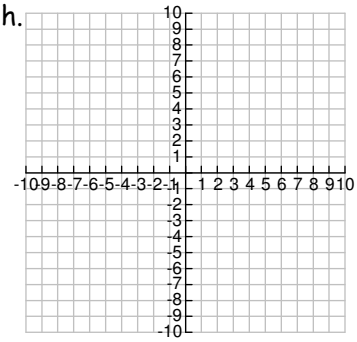
d. _____

e. _____

f. _____

g. _____

h.



4. $y = \frac{1}{x+3} - 1$

a. _____

b. _____

c. _____

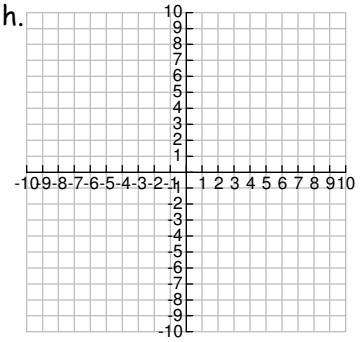
d. _____

e. _____

f. _____

g. _____

h.



5. $y = \frac{1}{3}(x-2)^3$

a. _____

b. _____

c. _____

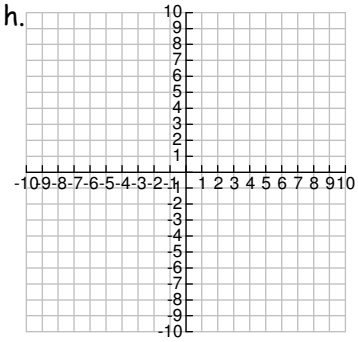
d. _____

e. _____

f. _____

g. _____

h.



6. $y = -3\sqrt{x+1} + 1$

a. _____

b. _____

c. _____

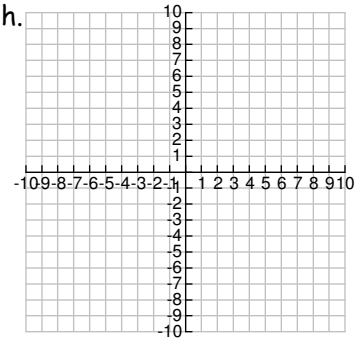
d. _____

e. _____

f. _____

g. _____

h.



a) name the parent function b) state the vertical stretch or compression **c)** reflection? d) state the phase shift state the range e) state the vertical shift **f)** state the domain **e)** state the range **h)** graph the function

7. $y = -3x^3 + 2$

a. _____

b. _____

c. _____

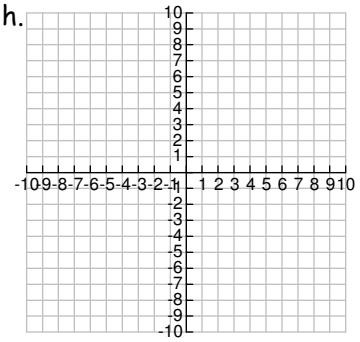
d. _____

e. _____

f. _____

g. _____

h.



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

a. _____

b. _____

c. _____

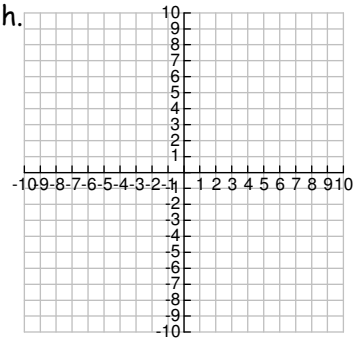
d. _____

e. _____

f. _____

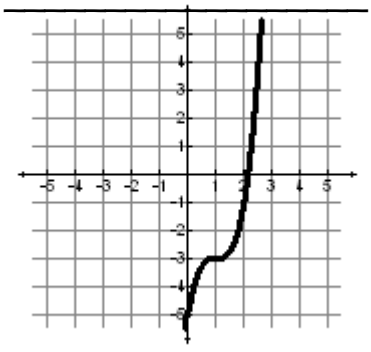
g. _____

h.

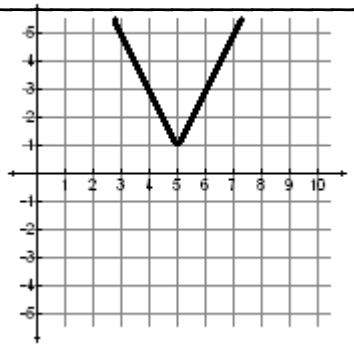


II. Write the equation for each of the following.

_____ 9.



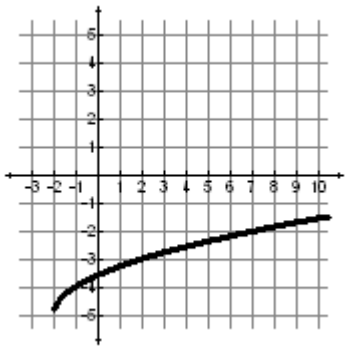
_____10.



_____ 11.

A square root function stretched by a factor of 3, reflected across the x-axis with a phase shift of 4 to the left.

_____12.



_____ 13. An absolute value function moved 10 units to the left and reflected across the x-axis.

_____14. A quadratic function moved 2 units to the right and 8 units down.

_____ 15. A function is flipped across the x-axis and moved two units to the left to become $y = 3|x + 2| - 1$. What was the beginning equation?

III. Multiple Choice.

____16. How can the graph of $y = -(x+12)^2$ be obtained from the graph $y = x^2$?

A. Reflect $y = x^2$ across the x-axis, then translate the graph 12 units right.

B. Reflect $y = x^2$ across the x-axis, then translate the graph 12 units left.

C. Translate $y = x^2$ 12 units right.

D. Translate $y = x^2$ 12 units left.

_____17. The domain and range for $y = \sqrt{x-2} + 3$ is

A. D: $(-\infty, 2]$ R: $(-\infty, 3]$

B. D: $[-2, \infty)$ R: $[3, \infty)$

C. D: $[2, \infty)$ R: $[-3, \infty)$

D. D: $[2, \infty)$ R: $[3, \infty)$

_____18. What is the domain of $y = \frac{1}{x-3} + 4$

A. D: $(-\infty, -3) \cup (-3, \infty)$

B. D: $(-\infty, 4) \cup (4, \infty)$

C. D: $(-\infty, -4) \cup (-4, \infty)$

D. D: $(-\infty, 3) \cup (3, \infty)$

_____19. Which function has a domain of $[2, \infty)$?

A. $y = 3(x-2)^3 + 2$

B. $y = (x-2)^2 + 2$

C. $y = \sqrt{x-2} + 2$

D. $y = -|x-2| + 2$

_____20. Which function has a range of $(-\infty, 2]$?

A. $y = -3(x - 2)^3 + 2$

B. $y = (x - 2)^2 + 2$

C. $y = \sqrt{x - 2} + 2$

D. $y = -|x - 2| + 2$

_____21. Which of the following functions is shown in the graph?

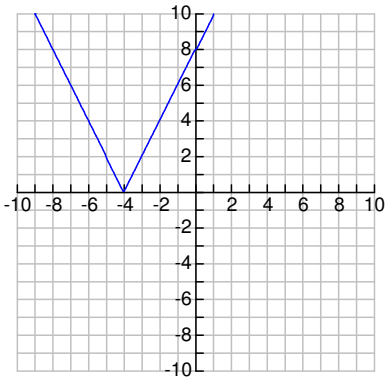
A. $f(x) = \frac{1}{2}|x - 4|$

B. $f(x) = 2|x + 4|$

C. $f(x) = \frac{1}{2}|x + 4|$

D. $f(x) = 2|x - 4|$

E. none of the above



_____22. The asymptotes of $y = \frac{1}{x + 3} - 4$ intersect at

A. (3, –4)

B. (–3, 4)

C. (–3, –4)

D. (3, 4)

_____23. Which statement is true?

A. The graphs of $y = 2x^2$ and $y = \frac{1}{2}x^2$ are reflections.

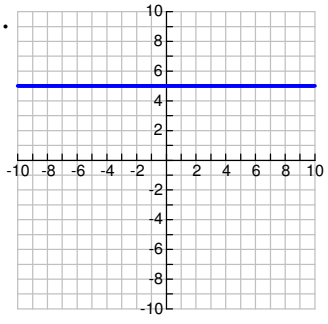
B. The graphs of $y = 2x^2$ and $y = -2x^2$ have different vertices.

C. The graph of $y = 2x^2$ is wider than the graph $y = -2x^2$

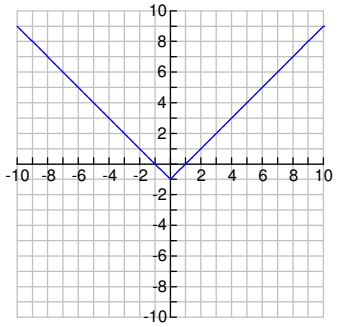
D. The graph of $y = 2x^2$ is narrower than the graph of $y = \frac{1}{2}x^2$.

_____24. Which of the following graphs illustrates a direct variation?

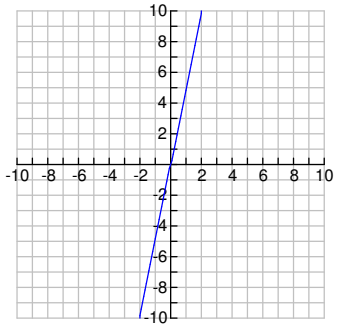
A.



B.



C.

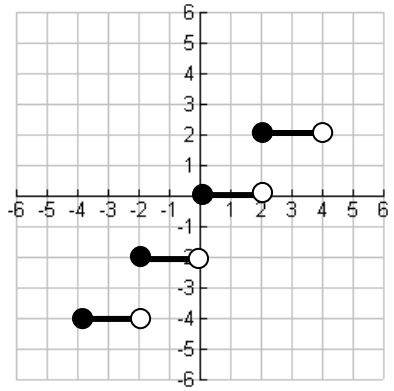


_____25. What value of "a" will make $f(x) = x^a + 2$ a linear function whose graph is NOT a horizontal line?

A. 0 B. 1 C. 2 D. 3

IV. State the domain and range. Then state whether or not the following is a function.

26.

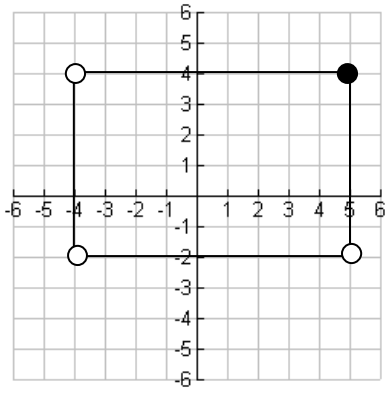


D: _____

R: _____

Function? _____

27.



D: _____

R: _____

Function? _____