Name_____Date_____

Chapter 1 Review 1

Factor.

1) $x^3 + 5x^2 - 9x - 45$

2) $2x^4 - 6x^3 - 32x^2 + 96x$

3) $x^{\frac{7}{2}} - 9x^{\frac{5}{2}} + 20x^{\frac{3}{2}}$

4) $x^{\frac{3}{2}} - 7x^{\frac{1}{2}} + 10x^{\frac{-1}{2}}$

5) $2x^2 + 11x - 21$

6) $6x^2 - 11x - 10$

7) $x^4y^2 - 25x^2$

8) $16a^4 - 81b^4$

9) $x - 3\sqrt{x} - 4$

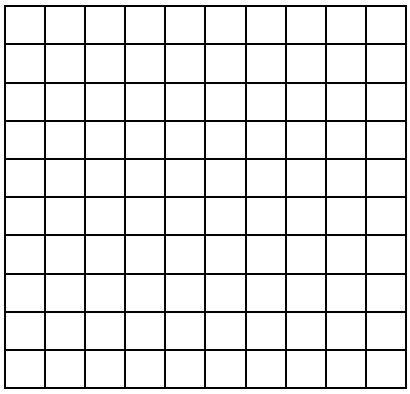
10) $x + 14\sqrt{x} + 49$

11) $a^6 - b^6$

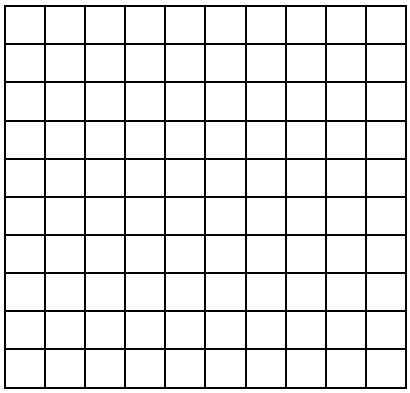
12) $3x^4y^2 + 24xy^2$

Graph the function.

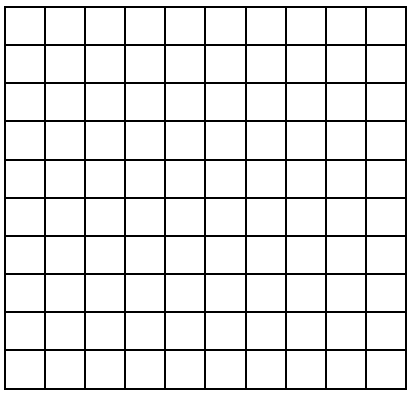
13) $f(x) = \begin{cases} -1 & \text{if } x < -2 \\ \sqrt{x+2} & \text{if } x \geq -2 \end{cases}$



14) $f(x) = \begin{cases} -x & \text{if } x < 0 \\ 0 & \text{if } 0 \leq x < 3 \\ -x+6 & \text{if } x \geq 3 \end{cases}$



15) $f(x) = \begin{cases} x+3 & \text{if } x < -1 \\ x^2 & \text{if } -1 \leq x < 2 \\ \frac{1}{2}x - 3 & \text{if } x \geq 2 \end{cases}$

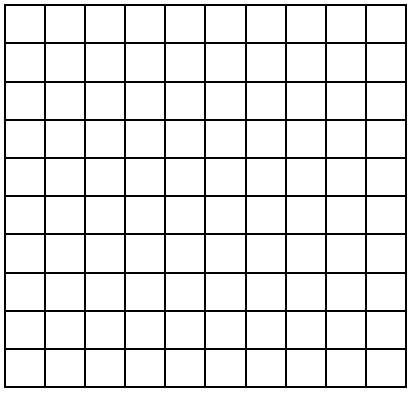


Graph the functions using transformations.

16) $f(x) = \sqrt{x}$ basic

$f(x) = \sqrt{1-x} + 3$

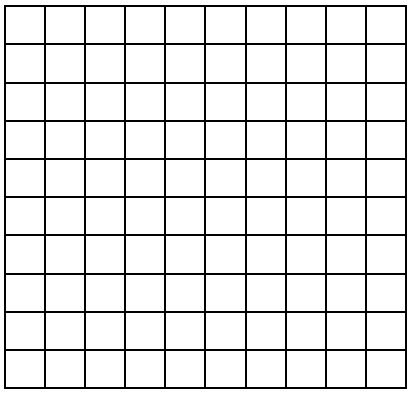
$f(x) = -\sqrt{x+3}$



17) $f(x) = e^x$ (show asymptote)

$f(x) = e^x - 3$

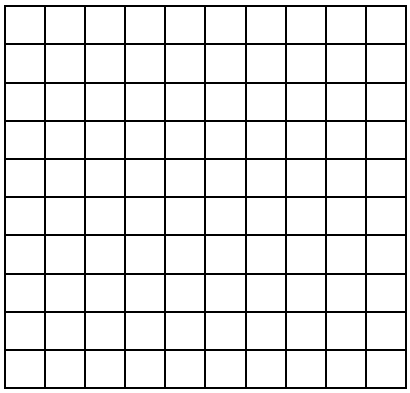
$f(x) = -e^{(x+3)}$



18) $f(x) = \ln x$

$f(x) = -\ln x - 4$

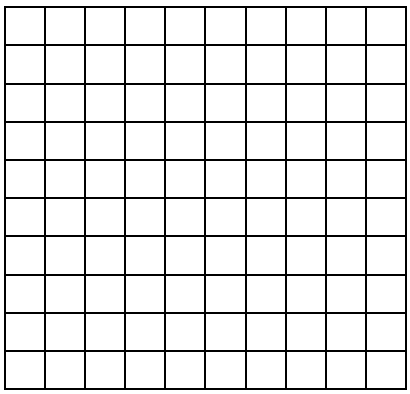
$f(x) = \ln(x+3)$



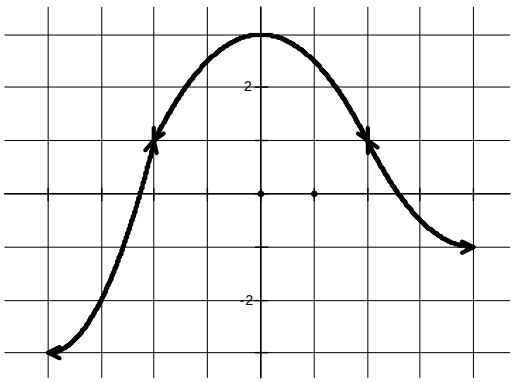
19) $f(x) = \sin x$

$f(x) = \sin x - 3$

$f(x) = \sin(2x) + 3$



20) Use interval notation to state the domain on which the function is increasing and decreasing.



Use interval notation to state the domain.

21) $f(x) = x^3$

22) $f(x) = \dfrac{1}{x}$

23) $f(x) = \dfrac{3}{x^2 - 9}$

24) $f(x) = \dfrac{x+2}{x^2 - x - 6}$

25) $f(x) = \dfrac{\sqrt{x}}{x^2 - 6x + 8}$

26) $f(x) = \dfrac{\sqrt{2-x}}{2x^2 - 3x - 9}$

Solve.

27) $e^{1-4x} = 2$

28) $e^{2x} - 3e^{x} + 2 = 0$

29) $\log_9(x-5) + \log_9(x+3) = 1$

30) $\log_5(x-1) - \log_5(x-1) = 2$