Name_____Date_____

Factor Completely

1) $7x^2+11x-30$

2) $2x^2-15x+28$

3) $6x^2+20x-16$

4) $24x^2-44x+12$

5) $16x^3-32x^2-20x$

6) $30x^3+25x^2+5x$

7) $x^3+2x^2-9x-18$

8) $x^3-3x^2-4x+12$

9) x^4-13x^2-48

10) $9x^4-100y^6$

11) $27x^3-y^6$

12) $7x^{11}+56x^8$

13) $x^{5/2}+6x^{3/2}-27x^{1/2}$

14) $x-7\sqrt{x}+10$

State the domain. Use interval notation.

15) $f(x) = \sqrt{x+11}$

16) $g(x) = \dfrac{2+x}{x^2}$

17) $h(x) = \dfrac{x^2-9}{x+3}$

18) $f(x) = \dfrac{14}{x^2+12x+32}$

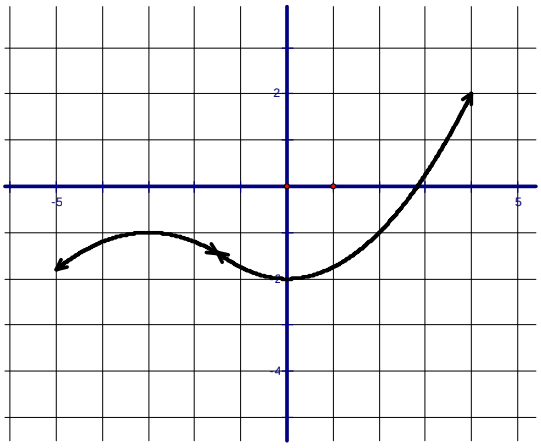
19) $g(x) = \sqrt{x^2-81}$

20) $h(x) = \sqrt{x^2+2x-24}$

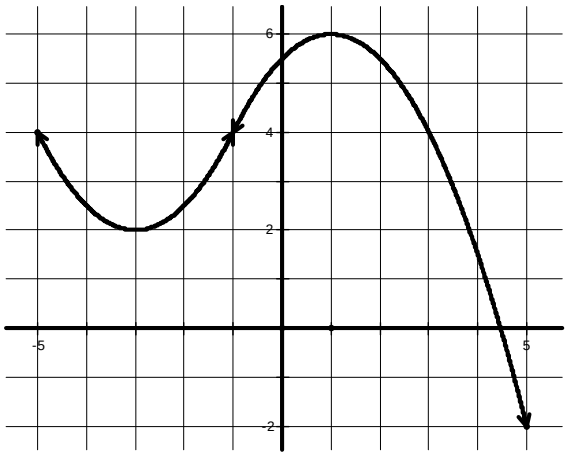
21) $f(x) = \dfrac{\sqrt{5-x}}{7x}$

22) $g(x) = \dfrac{\sqrt{2x+10}}{x^2-9}$

Use Interval notation to describe the domain of the function when it is increasing and decreasing.



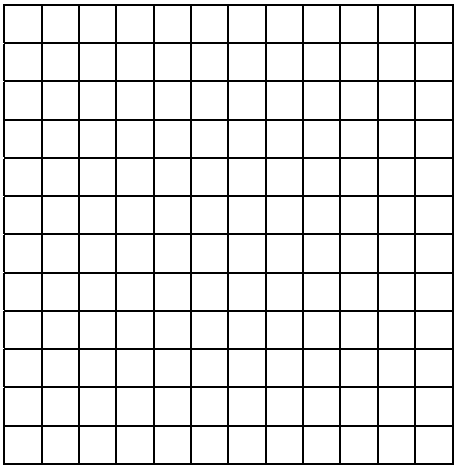
23)



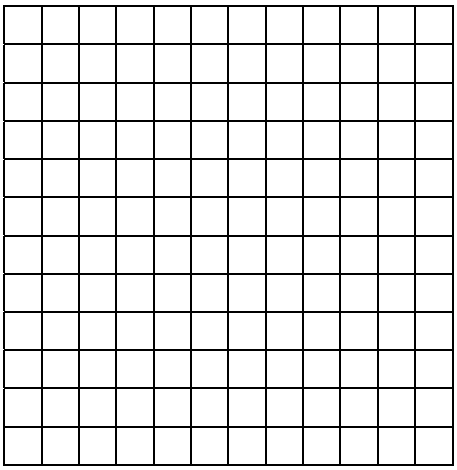
24)

Graph the piecewise defined function.

25) $f(x) = \begin{cases} 1 & \text{if } x < -1 \\ -x^2 + 2 & \text{if } -1 \le x \le 2 \\ x & \text{if } x > 2 \end{cases}$



26) $f(x) = \begin{cases} -x + 4 & \text{if } x < -2 \\ x & \text{if } x \ge -2 \end{cases}$



Find the difference quotient: $\dfrac{f(a+h) - f(a)}{h}$

27) $f(x) = 3x + 2$

28) $f(x) = 3 - 5x + 4x^2$

Determine whether the function is even, odd, or neither.

29) $f(x) = \dfrac{1}{x^2}$

30) $f(x) = x + \dfrac{1}{x}$

31) $f(x) = 3x^2 + 2x^2 + 1$

32) $f(x) = x^4 - 4x^2$