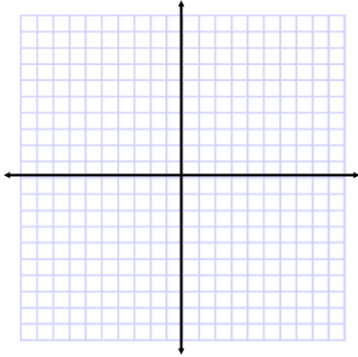


Midterm 2
Practice Test

Graph1 – 6. State: Domain, Range, x-intercept(s), and y intercept

1) $f(x) = \sqrt[2]{3-x} + 1$



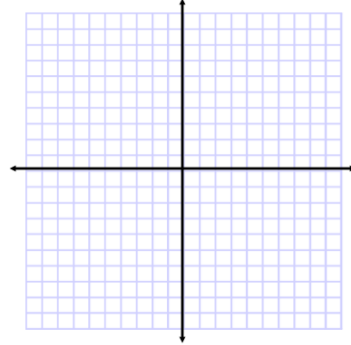
x int(s) _____

y int. _____

D= _____ R= _____

Where is $f(x) > 0$?

2) $g(x) = \sqrt[3]{x+2} - 1$



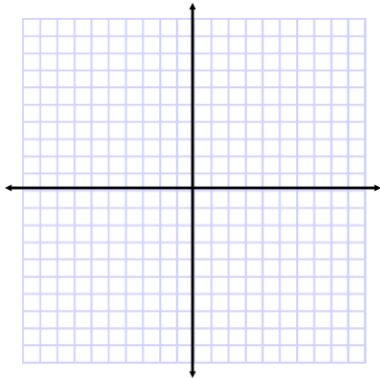
x int(s) _____

y int. _____

D= _____ R= _____

Where is $g(x) > 0$?

3) $y = \frac{3}{2}x + 1$

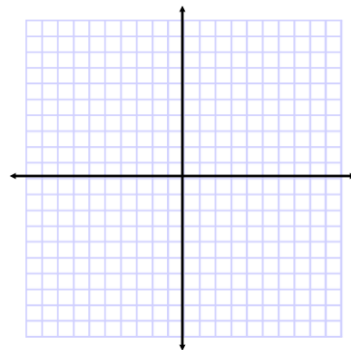


x int(s) _____

y int. _____

D= _____ R= _____

4) $m(x) = -2x(x-3)^3(x+1)(2-x)(x-1)^2$



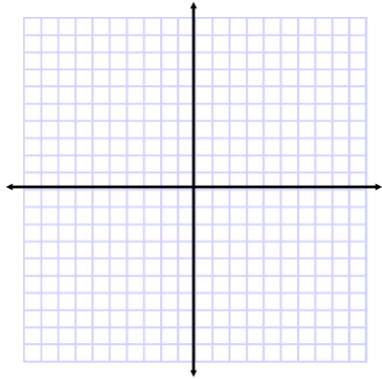
x int(s) _____ y int. _____

Leading term _____

D= _____ R=NO

Where is $m(x) > 0$?

5) $f(x) = -\sqrt[2]{x+2} + 1$

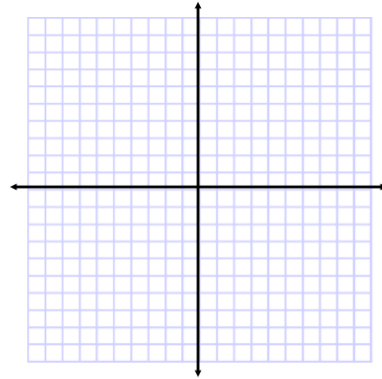


x int(s) _____

y int. _____

D= _____ R= _____

6) $g(x) = -\sqrt[3]{3-x} - 1$



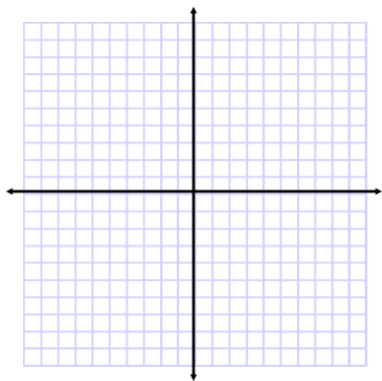
x int(s) _____

y int. _____

D= _____ R= _____

Graph 7 – 9. State: Domain, Range, x-intercept(s), and y intercept.

7) $h(x) = x^2 + 3x - 10$



vertex _____

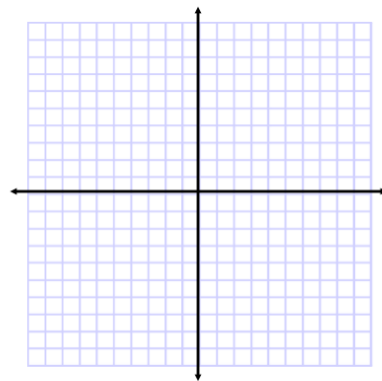
x int(s) _____

y int. _____

D= _____ R= _____

Where is $h(x) > 0$?

8) $n(x) = -3(x - 2)^2 + 3$



x int(s) _____

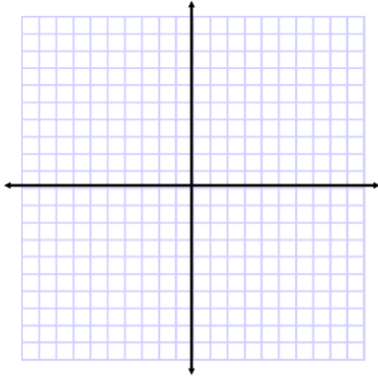
y int. _____

D= _____ R= _____

Where is $n(x) > 0$?

Graph 9-11. State the x-int., y-int, vertical asymptotes (VA), and leading term (LT)

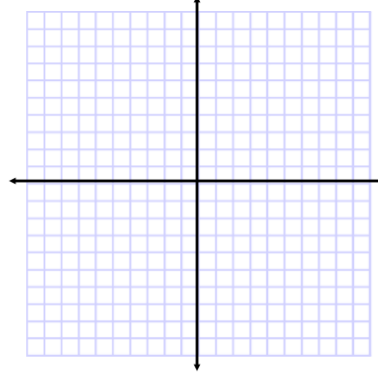
9) $f(x) = \frac{2x^2 + 1}{x^2 + 1}$



x int _____ y int _____

VA= _____ LT= _____

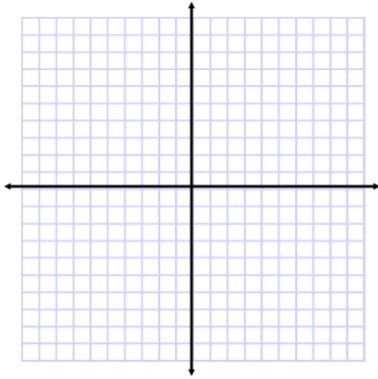
10) $f(x) = \frac{3}{x^2 - 4}$



x int _____ y int _____

VA= _____ LT= _____

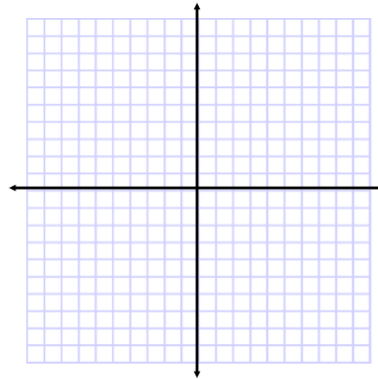
11) $f(x) = \frac{x+1}{x^2+x-6}$



x int _____ y int _____

VA= _____ LT= _____

12) $f(x) = \frac{(x+1)(x-2)^2}{x+3}$



x int _____ y int _____

VA= _____ LT= _____

13) Simplify: $\frac{12x^3 - 13x^2 + 9x - 2}{x^2 - 1}$

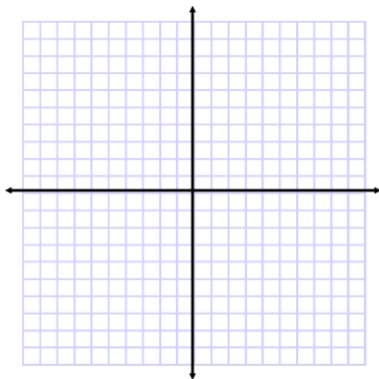
14) Is $(x-1)$ a factor of $x^5 + 3x^4 + x^3 - x^2 - x - 1$?

Explain:

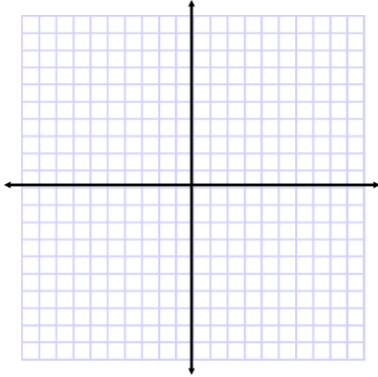
15) COMPLETING THE SQUARE of $f(x) = 3x^2 + 6x - 5$ by.

Using the completed square form find the roots of $f(x)$:

16) Factor $f(x) = 3x^3 - 4x^2 - x + 2$ completely. Hint $x = 1$ is a root.
Sketch the graph, show x and y intercepts

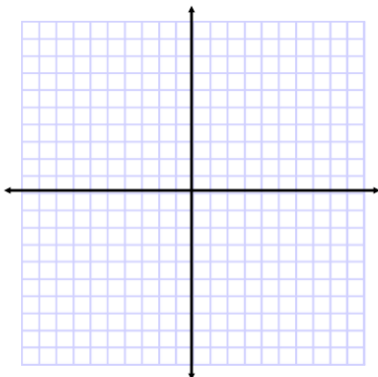


- 17) Factor $f(x) = x^4 + x^3 - 6x^2 - 4x + 8$ completely. Hint $x = 1$ and $x = -2$ are roots. Sketch the graph. Show x and y intercepts.



- 18) Find all real roots for $f(x) = x^3 - 2x^2 - 2x + 1$ Hint $(x + 1)$ is a factor.

- 19) Find all real roots for $f(x) = x^4 + 3x^3 - 15x^2 - 19x + 30$ Hint $(x + 2)$ and $(x - 1)$ are factors. Sketch the graph, show x and y intercepts.



Simplify:

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

$$21) \frac{5x^4}{\left(\frac{3x^3}{2}\right)\left(\frac{2x}{5}\right)}$$

$$22) \frac{2}{x} + \frac{x}{3}$$

$$23) \frac{x+3}{2x} + \frac{4}{x-1}$$

Find the value of x

$$24) \frac{3x-1}{x+2} = 4$$

$$25) \frac{x^2+4}{x^2-x-2} = 1$$

26) Solve for x: $\sqrt[2]{3x-2}-6 = -4$

27) Solve the inequality for x: $10 \leq 2-x^3$

28) Solve the inequality for x: $\sqrt{2x-1} \geq 4$

29) Solve the inequality for x: $\frac{2}{x-3} \leq 5$

30) Solve the inequality for x: $\frac{3}{2-x} \leq 4$

31) Solve the inequality for x: $\frac{1}{5-x} \geq 3$