1. Simplify the expression:

(a) 
$$6y^{0}(3y^{2})^{-1} = 6 \cdot 1 \cdot \frac{1}{3y^{2}} = \frac{2}{y^{2}}$$

(b) 
$$\frac{4^2b^3c^{-3}}{(2a)^3b^2c^0} = \frac{1bb}{8a^3c^3} = \frac{2b}{0^3c^3}$$

2. Completely factor the polynomial:

(a) 
$$3x^{2} + 7x - 6 = 3x^{2} + 9x - 2x - 6$$

$$\longrightarrow AC: -19, = 3x(x+3) - 2(x+3)$$
B:  $7 = 9 - 2$ 

$$= (3x - 3)(x+3)$$

$$(b) x^{3} - 6x^{2} - 4x + 24$$

$$x^{2} (x - b) - 4(x - b) = (x^{2} - 4)(x - b)$$

$$= (x - 3)(x + 3)(x - b)$$

3. Find all solutions to the equations:

(b)  $x - 5 = 4\sqrt{x}$ 

this move

(a) 
$$x^{6} - 7x^{3} + 6 = 0 = x^{6} - 6x^{3} - 1 \cdot x^{3} + 6 = 0$$

$$= x^{3}(x^{3} - 6) - 1(x^{3} - 6) = 0$$

$$= (x^{3} - 6)(x^{3} - 1) = 0$$

$$= (x^{3} - 6)(x^{3} - 1) = 0$$

$$x = \pm \sqrt[3]{6} \quad x = \pm \sqrt[3]{1} = \pm 1$$

$$(x-5)^{R} = (4\sqrt{x})^{2} = 4^{2}\sqrt{x^{2}} = 16 \times | x(x-25) - (x-25) = 0$$

$$x^{2} - 10x + 25 = 16 \times | x = 25$$

$$x^{2} - 26x + 85 = 0$$

$$x^{2} - 35x - x + 25 = 0$$

$$(c)^{3/2x+3} + 1 = 0$$

$$x = 25$$

$$x$$

4. Find the Domain of the given functions:

(a) 
$$f(x) = 13$$

R

 $\left(-\infty,\infty\right)$ 
 $\left\{\times \mid \times \in \mathbb{R}\right\}$ 

Altered #15

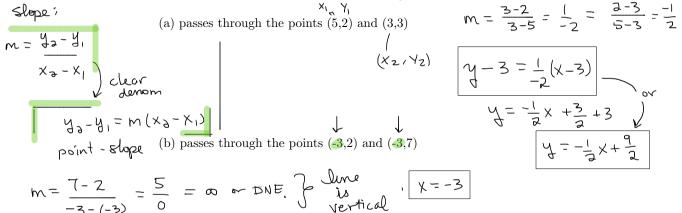
EXCLUPE

 $\left(-\infty,0\right)\cup\left(0,3\right)$ 

(b) 
$$f(x) = \frac{1}{x^2 - 3x}$$
 |  $x^3 - 3x = 0$  |  $x(x-3) = 0$  |  $x = 0$  |  $x$ 

No 
$$\sqrt{\phantom{a}}$$
 of a regative; [4,00]  
 $4-x \ge 0$  so  $4 \ge x$  |  $4$  is included

5. Write an equation for a line the satisfies the given characteristics



(c) passes through (3,-2) perpendicular to  $y=-\frac{1}{2}x-6$  neg. recip  $\sin \omega \quad m=-\frac{1}{2} \quad , \quad m_{\perp}=2 \quad \text{sur slipe}$ 

$$y-(-3)=2(x-(3))$$

## expand your answer

6. Find the following compositions of:

$$f(x) = x^{2} - 3x + 4 \quad \text{and} \quad g(x) = x - 3$$

$$f(x) = x^{1} - 3x + 4$$

$$f(x) = x^{1} - 3x + 4$$

$$f(x) = x^{1} - 3x + 4$$

$$= (g(x))^{2} - 3(g(x)) + 4$$

$$= (x - 3)^{2} - 3(x - 3) + 4$$

$$= (x - 3)^{2} - 3(x - 3) + 4$$

$$= x^{2} - 6x + 9 - 3x + 9 + 4$$

$$= x^{2} - 6x + 9 - 3x + 9 + 4$$

$$= x^{2} - 9x + 3x$$

$$= x - 3 - 3$$

$$= x - 3 - 3$$

7. For each function find its inverse:

set, swap, solve 
$$\int_{0}^{1} (x) = x^{3} - 5$$

(a) 
$$f(x) = \sqrt[3]{x+5}$$

solve "think outside-in" 
$$x^3 = (3\sqrt{y+5})^3$$

$$x^3 = 4.5$$

$$x^3 = (3\sqrt{y+5})^{\frac{3}{2}}$$

(b) 
$$f(x) = \frac{3x+2}{x-5}$$
  $(x^3-5) = 4$ 

$$(x^3-5)=4$$

(2)

Set 
$$y = f(x) = \frac{3x+\lambda}{x-5}$$

sump 
$$x = \frac{3y+3}{y-5}$$
 (z) remove parentlesis (distribute)

(1) get everything on same level (clear denom)

$$(y-s)x = 3y + 2$$

(3) we +, - to get terms w/y on same side

$$4x-3y=2+5x$$

$$\frac{1}{2} + 5 \left( -\frac{3}{5} \right) = \frac{3 - 3}{-\frac{3}{5}} = \frac{3 - 3}{-\frac{17}{5}} = 0$$

$$A = \frac{x - 3}{9 + 2x} = f_{-1}(x)$$

$$A(x - 3) = 9 + 2x$$