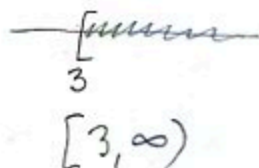
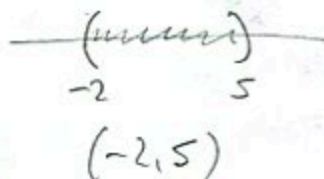


Write interval notation and sketch on the number line.

1. (3pts) $\{x|x \geq -3\}$



2. (3pts) $\{x|-2 < x < 5\}$



Solve the equations.

3. (3pts) $3x - 5 = 5x + 7 \quad | -5x$

$$\begin{aligned} -2x - 5 &= 7 & | +5 \\ -2x &= 12 & | \div (-2) \\ x &= -6 \end{aligned}$$

4. (4pts) $5(2x - 1) - 3x = 7 + 4(x - 3)$

$$\begin{aligned} 10x - 5 - 3x &= 7 + 4x - 12 & | -4x \\ 7x - 5 &= 4x - 5 & | -4x \\ 3x - 5 &= -5 & | +5 \\ 3x &= 0 & | \div 3 \\ x &= 0 \end{aligned}$$

Simplify and write in standard form:

5. (4pts) $(x + 5)(x^2 - 2x) - 4x^3 + 7x^2 =$

$$\begin{aligned} &= x^3 - 2x^2 + 5x^2 - 10x - 4x^3 + 7x^2 \\ &= -3x^3 + 10x^2 - 10x \end{aligned}$$

6. (4pts) $(x^2 + 3x)x - (x + 5)(x - 1) =$

$$\begin{aligned} &= x^3 + 3x^2 - (x^2 - x + 5x - 5) \\ &= x^3 + 3x^2 - x^2 - 4x + 5 \\ &= x^3 + 2x^2 - 4x + 5 \end{aligned}$$

Simplify and write the answer so all exponents are positive:

7. (2pts) $u^3(3z)^2 = u^3 \cdot 3^2 \cdot z^2 = 9u^3z^2$

8. (2pts) $\frac{(4x)^4}{x^9} = \frac{4^4 x^4}{x^9} = 256 x^{-5} = \frac{256}{x^5}$

9. (3pts) $(u^3v^5)^2 u^4v^3 = (u^3)^2 (v^5)^2 u^4 v^3 = u^6 v^{10} u^4 v^3 = u^{10} v^{13}$

10. (5pts) $(x^{-3}y^7)^2(5x^3y^{-2})^2 = (x^{-3})^2 (y^7)^2 5^2 (x^3)^2 (y^{-2})^2 = x^{-6} y^{14} \cdot 25 \cdot x^6 \cdot y^{-4}$
 $= 25x^0 y^{10} = 25y^{10}$

11. (7pts) $\frac{(2a^2b^{-4})^3}{(6a^{-2}b^3)^2} = \frac{2^3 (a^2)^3 (b^{-4})^3}{6^2 (a^{-2})^2 (b^3)^2} = \frac{8 a^6 b^{-12}}{36 a^{-4} b^6} = \frac{2 a^{10} b^{-18}}{9} = \frac{2a^{10}}{9b^{18}}$

Factor the following.

12. (4pts) $x^2 + x - 12 = (x+4)(x-3)$

prod = -12

sum = 1

4, -3

13. (4pts) $x^2 - 14x + 45 = (x-9)(x-5)$

prod = 45

sum = -14

-9, -5

Solve the equations.

14. (6pts) $x^2 - 2x - 4 = x + 24 \quad | -x - 24$

$x^2 - 3x - 28 = 0$

prod = -28

sum = -3

-7, 4

$(x+7)(x-4) = 0$

$x+7=0$ or $x-4=0$

$x = -7, 4$

15. (6pts) $2x^2 + 10x = x^2 + 11 \quad | -x^2 - 11$

$x^2 + 10x - 11 = 0$

prod = -11

sum = 10

-11, 1

$(x+11)(x-1) = 0$

$x+11=0$ or $x-1=0$

$x = -11, 1$