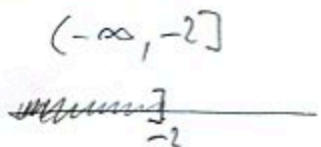
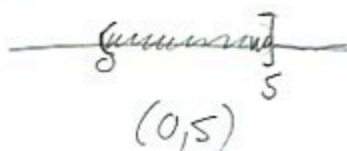


Write interval notation and sketch on the number line.

1. (3pts)  $\{x|x \leq -2\}$



2. (3pts)  $\{x|0 < x \leq 5\}$



Solve the equations.

3. (3pts)  $3x - 7 = 5x + 2 \quad | +7$

$$\begin{aligned} 3x &= 5x + 9 & | -5x \\ -2x &= 9 & | \div -2 \\ x &= -\frac{9}{2} \end{aligned}$$

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

$$\begin{aligned} 8x - 16 - x &= 5 - 3x - 3 \\ 7x - 16 &= 2 - 3x & | +16 \\ 7x &= 18 - 3x & | +3x \\ 10x &= 18 \\ x &= \frac{18}{10} = \frac{9}{5} \end{aligned}$$

Simplify and write in standard form:

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

$$\begin{aligned} &= 3x^3 + 4x - 6x^2 - 8 - 2x^3 + 4x^2 \\ &= x^3 - 2x^2 + 4x - 8 \end{aligned}$$

6. (4pts)  $(2x - 3)(x^2 + 9x - 8) = 2x^3 + 18x^2 - 16x - 3x^2 - 27x + 24$

$$= 2x^3 + 15x^2 - 43x + 24$$

Simplify and write the answer so all exponents are positive:

7. (2pts)  $(2u)^3 u^4 = 2^3 u^3 u^4 = 8u^3 u^4 = 8u^7 \leftarrow 3+4$

8. (2pts)  $\frac{x^7}{(3x)^4} = \frac{x^7}{3^4 x^4} = \frac{x^7}{81 x^4} = \frac{x^3}{81} \leftarrow 7-4$

9. (3pts)  $(3s^3 t^2)^3 s^2 t^4 = 3^3 (s^3)^3 (t^2)^3 s^2 t^4 = 27s^9 t^6 s^2 t^4 = 27s^{11} t^{10}$

10. (5pts)  $(5x^2 y^{-4})^2 (x^3 y^{-1})^3 = 5^2 (x^2)^2 (y^{-4})^2 (x^3)^3 (y^{-1})^3$   
 $= 25 x^4 y^{-8} x^9 y^{-3} = 25 x^{13} y^{-11} = \frac{25x^{13}}{y^{11}}$

11. (7pts)  $\frac{(2u^4 v^{-3})^4}{(10u^5 v^{-2})^2} = \frac{2^4 (u^4)^4 (v^{-3})^4}{10^2 (u^5)^2 (v^{-2})^2} = \frac{16 u^{16} v^{-12}}{100 u^{10} v^{-4}} = \frac{4u^6 v^{-8}}{25} = \frac{4u^6}{25v^8}$

Factor the following.

12. (4pts)  $x^2 + 5x - 14 =$

$(x+7)(x-2)$

prod = -14  $7, -2$   
 sum = 5

13. (4pts)  $x^2 - 20x - 44 =$

$(x-22)(x+2)$

prod = -44  $-22, 2$   
 sum = -20

Solve the equations.

14. (6pts)  $x^2 - x = x + 8 \quad | -x - 8$

$x^2 - 2x - 8 = 0$

$(x-4)(x+2) = 0$

$x-4=0$  or  $x+2=0$

$x = 4, -2$

15. (6pts)  $2x^2 - 3x - 24 = x^2 + 2x \quad | -x^2 - 2x$

$x^2 - 5x - 24 = 0$

$(x-8)(x+3) = 0$

$x-8=0$  or  $x+3=0$

$x = 8, -3$