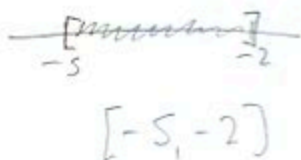
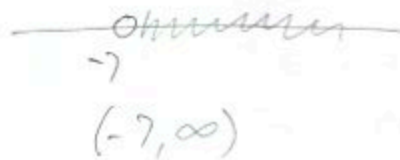


Write the sets in interval notation and sketch them on the number line.

1. (3pts)  $\{x | -5 \leq x \leq -2\}$



2. (3pts)  $\{x | x > -7\}$



Solve the equations.

3. (3pts)  $3x + 5 = 5x - 11 \quad | -5x$

$$-2x + 5 = -11 \quad | -5$$

$$-2x = -16 \quad | \div (-2)$$

$$x = \frac{-16}{-2} = 8$$

4. (4pts)  $7(4 - 2a) = 3(2a - 3) + 4$

$$28 - 14a = 6a - 9 + 4 \quad | +14a$$

$$28 = 20a - 5 \quad | +5$$

$$33 = 20a \quad | \div 20$$

$$a = \frac{33}{20}$$

Simplify and write in standard form:

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

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

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

$$= x^2 - 6x - 4x + 24 - 2x^2 - 10x$$

$$= -x^2 - 20x + 24$$

Simplify and write the answer so all exponents are positive:

7. (2pts)  $a^4(5a)^2 = a^4 \cdot 25a^2 = 25a^6$

8. (2pts)  $\frac{(6v)^3}{v^5} = \frac{6^3 v^3}{v^5} = 216 v^{-2} = \frac{216}{v^2}$

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

10. (5pts)  $(u^5 v^{-3})^2 (3u^4 v^{-2})^3 =$   
 $= (u^5)^2 (v^{-3})^2 3^3 (u^4)^3 (v^{-2})^3$   
 $= u^{10} v^{-6} \cdot 27 u^{12} v^{-6} = 27 u^{22} v^{-12} = \frac{27u^{22}}{v^{12}}$

11. (7pts)  $\frac{(12x^3 y^5)^2}{(2x^4 y^{-1})^4} = \frac{12^2 (x^3)^2 (y^5)^2}{2^4 (x^4)^4 (y^{-1})^4} = \frac{\overset{9}{144} x^6 y^{10}}{\underset{1}{16} x^{16} y^{-4}} = 9 x^{-10} y^{14}$   
 $= \frac{9y^{14}}{x^{10}}$

Factor the following.

12. (4pts)  $x^2 - 2x - 15 = (x-5)(x+3)$

prod = -15    -5, 3  
 sum = -2

13. (4pts)  $x^2 - 14x + 24 = (x-12)(x-2)$

prod = 24    -12, -2  
 sum = -14

Use the ac-method or another method to factor. Show how you got your answer.

14. (6pts)  $3x^2 - 10x - 8 =$

prod = -24    -12, 2  
 sum = -10

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

15. (6pts)  $4x^2 + 4x - 15 =$

prod = -60    10, -6  
 sum = 4

$= 4x^2 + 10x - 6x - 15$   
 $= 2x(2x+5) - 3(2x+5)$   
 $= (2x-3)(2x+5)$