Problem Set 12

1. Rationalize the denominator in each of the following expressions.

   a) $\dfrac{2}{\sqrt{5}}$ b) $\dfrac{1}{\sqrt{10}+3}$ c) $\dfrac{6}{\sqrt{5}-1}$

2. Completely factor each of the following.

   a) $3x^4y - 75x^2y$ b) $2x^5 - 162x$ c) $20ab + 5a^3b$ d) $(5m-1)^2 - 9$

3. Simplify each of the following.

   a) $\dfrac{2x-10}{2}$ b) $\dfrac{2x-10}{x^2-25}$ c) $\dfrac{x^2-10}{10-x^2}$ d) $\dfrac{28-\sqrt{12}}{2}$

4. Solve:

   a) $3x^5 = 48x^4$ c) $3x^5 = 48x$

   b) $3x^5 = 48x^3$ d) $(x-3)^2 - (x-2)(3x-5) = -(x-1)^2$

5. The sum of two consecutive integers is 35. Find these numbers.

6. Two times a number is 8 less than the sum of 11 and the opposite of the number. Find this number.

7. Children's tickets cost \$8, adult tickets cost \$15. The number of children's tickets we baught is five more than twice the number of adults' tickets we baught. How many of each type of tickets did we buy if we paid a total of \$381?

8. One side of a rectangle is 3 cm shorter than four times the other side. Find the length of the sides if the perimeter of the rectangle is 194 cm.

9. The largest angle in a triangle is 85°. The difference between the other two angles is 17°. Find all angles in the triangle.

10. We have a jar of coins, all quarters and dimes. All together, they are worth \$10. 20 The number of dimes is eight less than three times the number of quarters. How many quarters, how many dimes?

11. The opposite of a number is 20 more than three times the number. Find this number.

12. 105 people showed up on the meeting. The number of men was 17 less than the number of women. How many women were there?