Workshop Exercises for Week 3

Attempt the following workshop exercises. These are the exercises that are used in the workshop portion of the internal lectures. No solutions are available for these exercises. Answers to selected workshop exercises are included.

1. Solve: $\sqrt{5x} - 3 = 3$
2. Solve: $t = 5 + 3[4t - 5(1+t)]$
3. Solve: $\frac{3}{2} + 4\left(\frac{x-2}{x}\right) = 9$
4. Solve: $\frac{y - 3}{y} - \frac{8}{y} = \frac{y}{y - 3}$
5. Solve: $\sqrt{2x + 4} - 36 = 0$
6. Solve: $\frac{3x - 2}{x + 1} = 0$
7. Solve: $x^2 + x - 2 = 0$
8. Use the quadratic formula to solve the following equation: $9 - 4x + x^2 = 0$
9. Solve: $\frac{x + \frac{3}{2}}{x - 2} - \frac{\frac{3}{2}}{x} = 4$

Challenge problem

10. Factorise the following expressions by extracting the highest common factor:
   a) $27x^3 - 27x$
   b) $x(a - b) + 5(b - a)$
   c) $8b - 80c - b^2 + 10bc$
Answers

1. \( x = \frac{6}{\sqrt{5}} \)

2. \( t = -2 \frac{1}{2} \)

3. \( x = -2 \frac{2}{7} \)

4. \( y = \frac{33}{14} = 2 \frac{5}{14} \)

5. \( x = 646 \)

6. \( x = \frac{2}{3} \)

7. \( x = -2 \) or 1

8. no solution

9. \( x = -\frac{1}{3} \) or 3

10. a) \( 27x(x+1)(x-1) \)
    b) \( (a-b)(x-5) \)
    c) \( (b-8)(10c-b) \)