

SHOW ALL WORK ON YOUR OWN PAPER!

1. Write in simplest radical form:  $\sqrt{420}$
2. Determine the nature of the roots of the equation  $9y^2 - 30y + 25 = 0$
3. Solve by **factoring**:  $x^2 - 3x = 18$
4. Solve by **factoring**:  $2x^3 - 9x^2 + 10x = 0$
5. Solve by **completing the square**:  $x^2 - 12x = 1$
6. Solve by **completing the square**:  $2x^2 + 5x + 1 = 0$
7. Solve by **the quadratic formula**:  $3x^2 - 8x + 1 = 0$
8. Solve by **any method**:  $4x^3 + x^2 - 36x = 9$
9. Determine the vertex and the axis of symmetry of the parabola  
$$y = x^2 - 14x + 5$$
10. Determine the vertex and the axis of symmetry of the parabola  
$$y = -\frac{1}{4}x^2 + 5x - 7$$