

Solving simultaneous equations

- solve simultaneous equations in two unknowns by substitution
- solve simultaneous equations in two unknowns by elimination

Problem 1. Solve the following equations for x and y ,

(a) by substitution and

(b) (b) by elimination

$$x + 2y = -1 \quad (1)$$

$$4x - 3y = 18 \quad (2)$$

Problem 2. Solve, by a substitution method, the simultaneous equations

$$3x - 2y = 12 \quad (1)$$

$$x + 3y = -7 \quad (2)$$

Problem 3. Use an elimination method to solve the following simultaneous equations

$$3x + 4y = 5 \quad (1)$$

$$2x - 5y = -12 \quad (2)$$

1. Evaluate $\sqrt{4.76}$ correct to 3 decimal places

$$\sqrt{4.76} = 2.18174 \approx 2.182$$

2. Evaluate $\sqrt{0.69}$ correct to 4 significant figures

$$\sqrt{0.69} = 0.830662 \approx 0.8307$$

3. Evaluate $\sqrt[6]{2451} - \sqrt[4]{46}$ correct to 3 decimal places

$$\sqrt[6]{2451} - \sqrt[4]{46} = 1.06761 \approx 1.068$$

4. Evaluate $\frac{1}{0.065} - \frac{1}{2.341}$ correct to 4 significant figures

$$\frac{1}{0.065} - \frac{1}{2.341} = 14.9574 \approx 14.96$$

5. Evaluate $(0.22)^5$ correct to 5 significant figures in engineering form

$$(0.22)^5 = 0.000515363 \approx 0.51536 \times 10^{-3}$$

6. Evaluate $\tan 39.55^\circ - \sin 52.53^\circ$ correct to 4 decimal places

$$\tan 39.55^\circ - \sin 52.53^\circ = 0.0321$$

7. Evaluate $\sin(0.432 \text{ rad})$ correct to 4 significant figures

$$\sin(0.432) = 0.418688 \approx 0.4187$$

8. Evaluate $\tan^{-1}(0.5)$ in degrees correct to 2 decimal places

$$\tan^{-1}(0.5) = 26.57^\circ$$

9. Evaluate $3e^\pi$ correct to 5 significant figures

$$3e^\pi = 69.4221 \approx 69.422$$

10. Evaluate $\frac{29.74 \times 0.0512}{11.89}$ correct to 3 decimal places

$$\frac{29.74 \times 0.0512}{11.89} = 0.128065 \approx 0.128$$

Write the following equations in a form suitable to be solved by calculator

$$\frac{1}{2p} + \frac{3}{5q} = 5$$

$$\frac{5}{p} - \frac{1}{2q} = \frac{35}{2}$$

Simplify the following equation then solve it using your calculator

$$x(x - 7) = 2(x - 9)$$