BossMaths

Solving equations

Higher worksheet

Solve the following equations

1) $6x + 4 = -19$

2) $\frac{x}{3} + 5 = -8$

3) $\frac{x + 2}{4} = 6$

4) $6x - 2 = 3x - 3$

5) $\frac{x + 8}{5} = 2x - 2$

BossMaths

Solving equations

Higher worksheet

6) $x^2 + 6x - 72 = 0$

7) $x^2 - 49 = 0$

8) $2x^2 - x - 45 = 0$

9) $x^2 + 6x - 4 = 0$

10) $x^2 - 2x - 1 = 0$

BossMaths

Solving equations

Higher worksheet

11) $x^2 - 3x + 16 = 4x + 4$

12) $1 + \frac{3}{x} - \frac{14}{x^2} = \frac{4}{x^2}$

BossMaths

Solving equations

Higher worksheet

Solve the following equations

1) $6x + 4 = -19$

$6x = -23$ (subtracting 4 from each side)

$x = \frac{-23}{6}$ (dividing each side by 6)

2) $\frac{x}{3} + 5 = -8$

$\frac{x}{3} = 13$ (subtracting 5 from each side)

$x = -39$ (multiplying each side by 3)

3) $\frac{x+2}{4} = 6$

$x + 2 = 24$ (multiplying each side by 4)

$x = 22$ (subtracting 2 from each side)

4) $6x - 2 = 3x - 3$

$3x - 2 = -3$ (subtracting $3x$ from each side)

$3x = -1$ (adding 2 to each side)

$x = \frac{-1}{3}$ (dividing each side by 3)

5) $\frac{x+8}{5} = 2x - 2$

$x + 8 = 5(2x - 2)$ (multiplying each side by 5)

$x + 8 = 10x - 10$ (expanding the right-hand side)

$8 = 9x - 10$ (subtracting x from each side)

$18 = 9x$ (adding 10 to each side)

$x = 2$ (dividing each side by 9)

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Solving equations

Higher worksheet

6) $x^2 + 6x - 72 = 0$

$(x + 12)(x - 6) = 0$

$x = -12, x = 6$

7) $x^2 - 49 = 0$

$(x + 7)(x - 7) = 0$

$x = -7, x = 7$

8) $2x^2 - x - 45 = 0$

$(x + 5)(2x - 9)$

$x = -5, x = \frac{9}{2}$

9) $x^2 + 6x - 4 = 0$

$(x + 3)^2 - 13 = 0$

$(x + 3)^2 = 13$

$x + 3 = \pm\sqrt{13}$

$x = -3 + \sqrt{13}, x = -3 - \sqrt{13}$

10) $x^2 - 2x - 1 = 0$

$(x - 1)^2 - 2 = 0$

$(x - 1)^2 = 2$

$x - 1 = \pm\sqrt{2}$

$x = 1 + \sqrt{2}, x = 1 - \sqrt{2}$

Solving equations

Higher worksheet

11) $x^2 - 3x + 16 = 4x + 4$

$x^2 - 7x + 12 = 0$ (adding $-4x$ -4 to each side)

$(x - 3)(x - 4) = 0$ (factorising)

$x = 3, x = 4$

12) $1 + \frac{3}{x} - \frac{14}{x^2} = \frac{4}{x^2}$

$x^2 + 3x - 14 = 4$ (multiplying each side by x^2)

$x^2 + 3x - 18 = 0$ (subtracting 0 from each side)

$(x + 6)(x - 3) = 0$ (factorising)

$x = -6, x = 3$