

SBHS - YEAR 10 QUADRATICS MARCH 2007

NAME : _____

1. Solve:
a) $(a+4)(a-9) = 0$

b) $(3x-2)(4x+5) = 0$

2. Simplify $\frac{m^2 - m}{m^2 - 1}$

3. Write as a single simplified fraction $\frac{1}{1-x^2} + \frac{1}{1+x}$

4. Solve
a) $b^2 + 7b + 12 = 0$

b) $8x^2 - 10x - 3 = 0$

c) $x^2 = 1$

d) $x^2 - 49 = 9$

e) $7d - d^2 = 0$

Solve by completing the square:

(a) $x^2 + 2x - 5 = 0$

(b) $3x^2 - 3x - 1 = 0$

6. Solve by using the quadratic formula

(a) $8x^2 - 34x + 21 = 0$

(b) $3x^2 + 9x + 5 = 0$

7. At present Mark is x^2 years old and Peter's age is x years. When Mark is $10x$ years Peter will be $2x$ years old. Write a quadratic equation in x to describe this information. Solve the equation to find their ages now.

Solve by completing the square:

(a) $x^2 + 2x - 5 = 0$

$x^2 + 2x = 5$

$x^2 + 2x + 1 = 6$

$(x+1)^2 = 6$

$x+1 = \pm\sqrt{6}$

$x = \pm\sqrt{6} - 1 = \sqrt{6} - 1, \text{ or } -\sqrt{6} - 1$

(b) $3x^2 - 3x - 1 = 0$

$x^2 - x = \frac{1}{3}$

$(x - \frac{1}{2})^2 = \frac{7}{12}$

$x - \frac{1}{2} = \pm\sqrt{\frac{7}{12}}$

$x = \frac{1}{2} \pm \sqrt{\frac{7}{12}}$

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NAME SOLUTIONS

1) Solve: $(a+4)(a-9) = 0$ $a = 9, \text{ or } -4$

b) $(3x-2)(4x+5) = 0$ $x = \frac{2}{3}, \text{ or } -\frac{5}{4}$

2. Simplify $\frac{m^2 - m}{m^2 - 1} \cdot \frac{m}{m+1}$

3. Write as a single simplified fraction $\frac{1}{1-x^2} + \frac{1}{1+x}$

$\frac{2-x}{(1+x)(1-x)}$

4. Solve (a) $b^2 + 7b + 12 = 0$

$b = -4, \text{ or } -3$

(b) $8x^2 - 10x - 3 = 0$

$x = \frac{1}{4}, \text{ or } \frac{3}{2}$

(c) $x^2 = 1$ $x = \pm 1$

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(d) $x^2 - 49 = 0 \rightarrow x^2 - 49 = 0$ $x = 7, \text{ or } -7$

(e) $7a - a^2 = 0$ $a = 0, \text{ or } 7$

7. At present Mark is x^2 years old and Peter's age is x years. When Mark is 10x years Peter will be $\frac{1}{6}$ years old. Write a quadratic equation in x to describe this information. Solve the equation to find their ages now.

$x^2 - x = 8x$

$x^2 - 9x = 0$

$x^2 - 9x + (\frac{9}{2})^2 = (\frac{9}{2})^2$

$(x - \frac{9}{2})^2 = \frac{81}{4}$

$x - \frac{9}{2} = \pm\sqrt{\frac{81}{4}}$

Mark is currently 9
Peter is currently 81

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