

SOLUTIONS

Math 012

Mini Final Practice Exam

5 December 2008

1. Solve for x if:

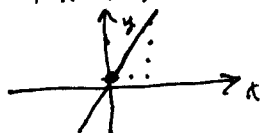
a. $8x - 7 = 2x + 4$ $8x - 2x = 4 + 7$ $6x = 11$ $x = 11/6$

b. $|2x + 3| = 5$ $2x + 3 = 5$ $2x = 5 - 3$ $2x = 2$ $x = 1$ or $2x + 3 = -5$ $2x = -8$ or $x = -4$

2. Solve for x if:

$2x^2 - 3x - 2 = 0$ $(2x + 1)(x - 2) = 0$ so $x = -1/2$ or $x = 2$

3. Sketch: $y = f(x) = \frac{3x}{2} + 1$

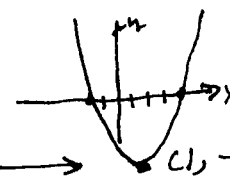


4. Sketch $y = (x - 4)(x + 2)$ and give the coordinates of the vertex of this parabola.

$= x^2 - 2x - 8$

$-b/2a = -(-2)/2 = 1$

$y = -9$ when $x = 1$



5. George and Sally are brother and sister. Sally is 4 times as old as George. The sum of their ages is 12.5 years. How old are George and Sally? *X is George's age* *4x is Sally's age*

$4x + x = 12.5$

$5x = 12.5$

$x = \frac{12.5}{5} = 2.5$

$4x = 10$

6. Find the equation of a line going through the points (1, 5) and (7, 22).

7. Simplify: $\frac{x^2 - 3x + 4}{x - 5} \div \frac{x + 1}{x^2 - 25} \cdot \frac{(x - 4)(x + 1)}{(x - 5)} \cdot \frac{(x - 5)(x + 5)}{(x + 1)}$

$m = \frac{22 - 5}{7 - 1} = \frac{17}{6}$

$y - 22 = \frac{17}{6}(x - 7)$

or $y - 5 = \frac{17}{6}(x - 1)$

$y = \frac{17}{6}x + \frac{13}{6}$

8. a. Simplify: $2^{-1} + 3^{-2} = \frac{1}{2} + \frac{1}{3^2} = \frac{1}{2} + \frac{1}{9} = \frac{9 + 2}{18} = \frac{11}{18}$

b. Add: $\frac{2}{x - 4} - \frac{3}{4x - 2}$

$\frac{2(4x - 2) - 3(x - 4)}{(x - 4)(4x - 2)} = \frac{8x - 4 - 3x + 12}{(x - 4)(4x - 2)} = \frac{5x + 8}{(x - 4)(4x - 2)}$

9. Sketch $y = 3^x + 2$



10. If $\log_6 6 = x$ and $\log_5 5 = y$, then

a. find $\log_5 30$ in terms of x and y. $\log_5(30) = \log_5(5 \cdot 6) = \log_5 5 + \log_5 6 = x + y$

b. find $\log_5 25$ in terms of x and y. $\log_5(25) = \log_5(5 \cdot 5) = \log_5 5^2 = 2 \log_5 5 = 2 \cdot y = 2y$

c. find $\log_5 6$ in terms of x and y. $\log_5 6 = \frac{\log_6 6}{\log_6 5} = \frac{x}{y}$