

Practice Test Continued....

1. Simplify the radicals.

a) $\sqrt{50}$

b) $-4\sqrt{72}$

c) $(2\sqrt{8})(5\sqrt{27})$

d) $12\sqrt{3} + 4\sqrt{2} - \sqrt{200} + 2\sqrt{75}$

e) $(3\sqrt{12} - 5\sqrt{2})(4\sqrt{3} + 2\sqrt{2})$

2. Use the discriminant to determine the number of zeros:

$$f(x) = 9x^2 - 14.4x + 5.76$$

3. Determine the break-even quantity for the following profit question, where x is the number of items sold, in thousands.

$$P(x) = -2x^2 + 18x - 40$$

4. Determine the roots for the following quadratic equations.

$$x^2 + 8x + 9 = 0$$

(using Quadratic Formula method)

$$x^2 - 4x - 17 = -5$$

(using Factoring)

5. A computer software company models the profit on its latest video game with the function $P(x) = -2x^2 + 32x - 110$, where x is the number of games sold (in thousands) and $P(x)$ is the profit (also in thousands).

a) What is minimum number of games that need to be sold to break even?

b) How many games must they sell to make a profit of \$16,000?

c) What is the maximum profit?

6. Justin is skeet shooting. The height of the skeet is modelled by the function seconds
 $h(t) = -5t^2 + 32t + 2$ where $h(t)$ is the height in metres t after the skeet is released. The path of Justin's bullet is modelled by the function $g(t) = 31.5t + 1$ with the same units. How long will it take for the bullet to hit the skeet? How high off the ground will the skeet be when it is hit?

7. A model rocket is launched into the air. Its height, $h(t)$ in metres after t seconds is $h(t) = -5t^2 + 60t + 4$.

a) What will the height be after 2 seconds?

b) When will the rocket hit the ground?

c) When will the rocket achieve max height? (Hint: Think vertex)

d) What is the maximum height of the ball? (Hint: Think vertex)

e) When will the rocket reach 25m above the ground?