WA 2

15/15 (3 EC possible)

1

7/7

(a) $ARC = \frac{0.3 - 2.6}{5 - 0} = \frac{-2.3}{5} = -0.46$ $\frac{m/sec}{sec}$

+1 +1

Interpret: For each second, the cat's speed dropped by 0.46 m/sec.

+1

(b) $PC = 100 \cdot \frac{0.3 - 2.6}{2.6}\% = \frac{-2.3}{2.6} \cdot 100\%$

$= -88.5\%$

+1

Interpret: The cat's speed dropped by 88.5%.

+1

(c) * Lots of possibilities.

Same: - Both are negative, indicating a decrease in speed.

+1

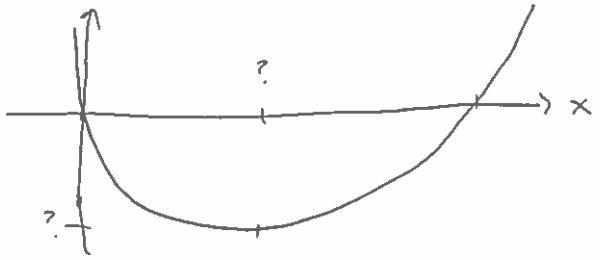
Diff: * ARC has units, but PC is unitless.

+1 * ARC gives info on unit increments, while PC only tells you about the total change.

(+1 pts as long as they write one similarity and one difference.)

(2)

4/4



(a) Find h_{vert}:

$$x_{vert} = -\frac{b}{2a} = -\frac{(-2)}{2(1/50)} = \frac{1}{1/50} = 50 \text{ ft.}$$ +1

Middle is 50 ft. (or, whole canal is 100 ft).

Then $h_{vert} = h(50) = \frac{1}{50}(50^2) - 2(50)$

$= 50 - 100$

$= -50.$ +1

So, The canal is 50 ft deep. +1

(The minus sign ~~says~~ says the canal goes below ground level.)

(b) Two ways to solve:

(1) Solve $h(x) = 0$:

$$\frac{1}{50}x^2 - 2x = 0$$

$$x\left(\frac{1}{50}x - 2\right) = 0$$

$\Rightarrow$ $x = 0$ (first side) or $\frac{1}{50}x - 2 = 0$

$x - 100 = 0$

$x = 100$ → 100 ft. to the other side.

(2) Note middle is at 50 ft, so other side is at 100 ft.

one or other, +2.

(3) (a) $Q(x) = 4x^2 - 9x + 7$.

4/4

$a = 4$
$b = -9$
$c = 7$

$\text{Disc} = b^2 - 4ac = (-9)^2 - 4(4)(7)$
$= 81 - 112 = \boxed{-31 < 0}$

So, there are no real solutions! +2 to $Q(x) = 0$.

(b) $Q(x) = 4x^2 - 9x - 7$.

$a = 4$
$b = -9$
$c = -7$

$\text{Disc} = (-9)^2 - 4(4)(-7)$
$= 81 + 112 = \boxed{193 > 0}$

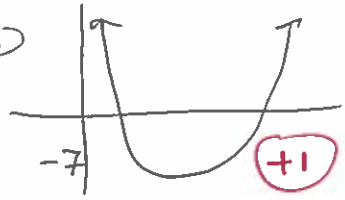
So, there are two real solutions to $Q(x) = 0$. +2

(c) (EXTRA CREDIT) What's the difference between these quadratics?

3/3

(a) +7

(b)



* the sign on -7 (+1) moves the parabola downward, across the x-axis. So, we get real