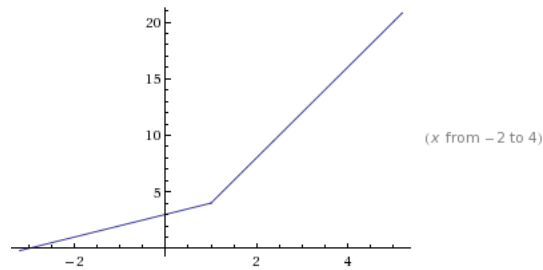# MATH 34A INVERSE FUNCTIONS AND POSITION/VELOCITY

I. Inverse functions.

(x from −2 to 4)

Estimate the following based on the graph.

a) $f^{-1}(5) =$

b) $f^{-1}(20) =$

c) $f^{-1}(3) =$

1. If $f(x) = 3x - 1$, what is a) $f^{-1}(0)$, b) $f^{-1}(-1)$, and c) $f^{-1}(2)$?
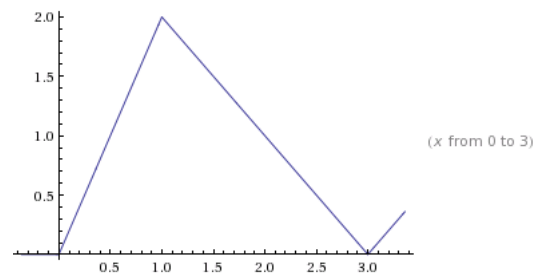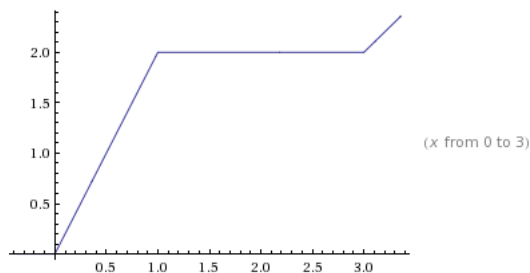
2. If $f(x) = -x + 5$, what is $f^{-1}(x)$?

3. If $f(x) = (2x)^{\frac{1}{5}}$, what is $f^{-1}(32)$? What is $f^{-1}(x)$?

4. If $f(x) = e^{x-1}$, what is $f^{-1}(1)$? What is $f^{-1}(x)$?

II. Distance-time graph and Velocity.

1. A particle is traveling on the x-axis and below (left) is its position-time graph.

(x from 0 to 3)

(x from 0 to 3)

a) What is the speed of the particle at $t = 0.5$?

b) What is the speed of the particle at $t = 2$?

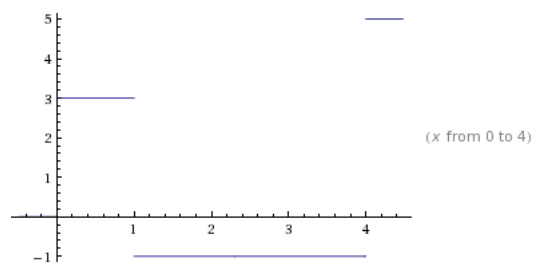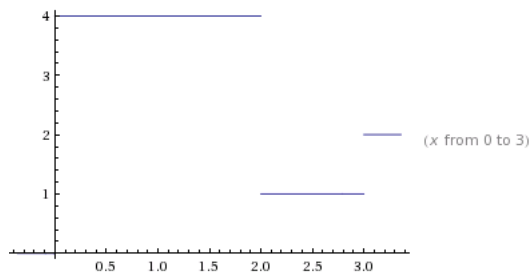2. A particle is traveling on the x-axis and above (right) is its position-time graph.

a) What is the speed of the particle at $t = 0.75$?

b) The graph is going down on $[1, 3]$. What does it tell you about the motion of the particle?

c) What is the velocity of the particle at $t = 2$? What is the speed?

III. Velocity-time graph and Distance.

1. A particle is traveling on the x-axis and below (left) is its velocity-time graph.

a) What is the distance traveled by the car during the time period $[2, 3]$?

b) What is the total distance traveled over the time interval $[0, 4]$?

2. A particle is traveling on the x-axis and above (right) is its velocity-time graph.

a) The graph is below the t-axis. What does it tell you about the motion of the particular?

b) What the total distance traveled by the particular over the time period $[0, 5]$?

c) If the particular started at the origin $x = 0$, where would it be when $t = 5$?