d. [3 points] A ball is thrown down from a hovercraft cruising above *Jupiter*. The ball's height above Jupiter's surface, h, in feet, is given by:

$$h = -40t^2 - 20t + 560$$

where t is measured in seconds after the ball was released.

From the moment the ball was released, how many seconds did it take for the ball to reach the surface of Jupiter? Show all work. Give your answer in exact form, or rounded to at least two decimal places.

```
_____seconds
```

- 5. [7 points] On the axes below, sketch a graph of a single function j(x) that satisfies all of the following properties:
 - j(x) has zeros at x = 1 and x = 3.
 - The domain of j(x) is $-6 \le x < \infty$.
 - $j(x) \longrightarrow -2$ as $x \longrightarrow \infty$. In other notation: $\lim_{x \to \infty} j(x) = -2$.
 - j(x) is decreasing on the interval [-6, -4].
 - The average rate of change of j(x) on the interval $-3 \le x \le -1$ is 2.
 - j(x) is concave down on the interval 1 < x < 3.

