

Section 3.4 Even Answers

2. (a) 10 m

(b) 2 m/sec

(c) 5 m/sec

(d) 2 m/sec²

(e) 1.5 seconds

(f) $t = 1.5$ seconds so position is $-\frac{1}{4}$ meters

4. On Mars: Velocity = $3.72t$, the downward velocity reaches 16.6 m/sec after about 4.462 seconds

On Jupiter: Velocity = $22.88t$, the downward velocity reaches 16.6 m/sec after about 0.726 seconds

6. Moon: It takes 320 seconds to return

Earth: It takes 52 seconds to return

8. $t = 0$, growth rate = 10,000 bacteria/hour

$t = 5$, growth rate = 0 bacteria/hour

$t = 10$, growth rate = $-10,000$ bacteria/hour

10. (a) \$110 per machine

(b) \$80 per machine

(c) \$79.90

12. $v = 0$ at $t = 1, 3$

At $t = 1$, $a = -6$ m/sec²

At $t = 3$, $a = 6$ m/sec²

16. (a) 190 ft/sec (b) 2 sec (c) after 8 seconds and its velocity was 0 ft/sec

(d) after about 11 seconds and its velocity was -90 ft/sec

(e) about 3 seconds (from the rocket's highest point)

(f) the acceleration was greatest just before the engine stopped. It was constant from $t = 2$ to $t = 11$ seconds, while the rocket was in free fall