Name_____

Calculus Practice: Rectilinear Motion 2b

A particle moves along a coordinate line. Its velocity function is $v(t)$ for $t \geq 0$. For each problem, find the position, velocity, and acceleration at the given value for t.

1) $v(t) = -2t + 13$; $s(0) = -40$; at $t = 5$

2) $v(t) = 4t^3 - 39t^2$; $s(0) = 0$; at $t = 7$

3) $v(t) = 3t^2 - 22t$; $s(0) = 0$; at $t = 4$

4) $v(t) = -3t^2 + 20t$; $s(0) = 0$; at $t = 5$

5) $v(t) = -2t + 26$; $s(0) = -168$; at $t = 5$

6) $v(t) = -4t^3 + 24t^2$; $s(0) = 0$; at $t = 8$

7) $v(t) = 2t - 14$; $s(0) = 33$; at $t = 2$

8) $v(t) = 2t - 25$; $s(0) = 156$; at $t = 6$

9) $v(t) = 2t - 10$; $s(0) = 0$; at $t = 6$

10) $v(t) = -2t + 21$; $s(0) = -104$; at $t = 6$

A particle moves along a coordinate line. Its acceleration function is $a(t)$ for $t \geq 0$. For each problem, find the position, velocity, and acceleration at the given value for t.

11) $a(t) = 12t^2 - 48t$; $s(0) = 0$; $v(0) = 0$; at $t = 2$

12) $a(t) = -2$; $s(0) = 90$; $v(0) = 9$; at $t = 2$

13) $a(t) = 12t^2 - 60t$; $s(0) = 0$; $v(0) = 0$; at $t = 4$

14) $a(t) = -6t + 30$; $s(0) = 0$; $v(0) = 0$; at $t = 8$

15) $a(t) = -6t + 52$; $s(0) = 0$; $v(0) = -169$; at $t = 8$

16) $a(t) = -12t^2 + 78t$; $s(0) = 0$; $v(0) = 0$; at $t = 5$

17) $a(t) = -2$; $s(0) = -81$; $v(0) = 18$; at $t = 3$

18) $a(t) = -12t^2 + 48t$; $s(0) = 0$; $v(0) = 0$; at $t = 4$

19) $a(t) = -6t + 46$; $s(0) = 0$; $v(0) = -120$; at $t = 2$

20) $a(t) = 12t^2 - 48t$; $s(0) = 0$; $v(0) = 0$; at $t = 8$

Name_____

Calculus Practice: Rectilinear Motion 2b

A particle moves along a coordinate line. Its velocity function is $v(t)$ for $t \geq 0$. For each problem, find the position, velocity, and acceleration at the given value for t.

1) $v(t) = -2t + 13$; $s(0) = -40$; at $t = 5$

$s(5) = 0, \ v(5) = 3, \ a(5) = -2$

2) $v(t) = 4t^3 - 39t^2$; $s(0) = 0$; at $t = 7$

$s(7) = -2058, \ v(7) = -539, \ a(7) = 42$

3) $v(t) = 3t^2 - 22t$; $s(0) = 0$; at $t = 4$

$s(4) = -112, \ v(4) = -40, \ a(4) = 2$

4) $v(t) = -3t^2 + 20t$; $s(0) = 0$; at $t = 5$

$s(5) = 125, \ v(5) = 25, \ a(5) = -10$

5) $v(t) = -2t + 26$; $s(0) = -168$; at $t = 5$

$s(5) = -63, \ v(5) = 16, \ a(5) = -2$

6) $v(t) = -4t^3 + 24t^2$; $s(0) = 0$; at $t = 8$

$s(8) = 0, \ v(8) = -512, \ a(8) = -384$

7) $v(t) = 2t - 14$; $s(0) = 33$; at $t = 2$

$s(2) = 9, \ v(2) = -10, \ a(2) = 2$

8) $v(t) = 2t - 25$; $s(0) = 156$; at $t = 6$

$s(6) = 42, \ v(6) = -13, \ a(6) = 2$

9) $v(t) = 2t - 10$; $s(0) = 0$; at $t = 6$

$s(6) = -24, \ v(6) = 2, \ a(6) = 2$

10) $v(t) = -2t + 21$; $s(0) = -104$; at $t = 6$

$s(6) = -14, \ v(6) = 9, \ a(6) = -2$

A particle moves along a coordinate line. Its acceleration function is $a(t)$ for $t \geq 0$. For each problem, find the position, velocity, and acceleration at the given value for t.

11) $a(t) = 12t^2 - 48t$; $s(0) = 0$; $v(0) = 0$; at $t = 2$

$s(2) = -48, \ v(2) = -64, \ a(2) = -48$

12) $a(t) = -2$; $s(0) = 90$; $v(0) = 9$; at $t = 2$

$s(2) = 104, \ v(2) = 5, \ a(2) = -2$

13) $a(t) = 12t^2 - 60t$; $s(0) = 0$; $v(0) = 0$; at $t = 4$

$s(4) = -384$, $v(4) = -224$, $a(4) = -48$

14) $a(t) = -6t + 30$; $s(0) = 0$; $v(0) = 0$; at $t = 8$

$s(8) = 448$, $v(8) = 48$, $a(8) = -18$

15) $a(t) = -6t + 52$; $s(0) = 0$; $v(0) = -169$; at $t = 8$

$s(8) = -200$, $v(8) = 55$, $a(8) = 4$

16) $a(t) = -12t^2 + 78t$; $s(0) = 0$; $v(0) = 0$; at $t = 5$

$s(5) = 1000$, $v(5) = 475$, $a(5) = 90$

17) $a(t) = -2$; $s(0) = -81$; $v(0) = 18$; at $t = 3$

$s(3) = -36$, $v(3) = 12$, $a(3) = -2$

18) $a(t) = -12t^2 + 48t$; $s(0) = 0$; $v(0) = 0$; at $t = 4$

$s(4) = 256$, $v(4) = 128$, $a(4) = 0$

19) $a(t) = -6t + 46$; $s(0) = 0$; $v(0) = -120$; at $t = 2$

$s(2) = -156$, $v(2) = -40$, $a(2) = 34$

20) $a(t) = 12t^2 - 48t$; $s(0) = 0$; $v(0) = 0$; at $t = 8$

$s(8) = 0$, $v(8) = 512$, $a(8) = 384$