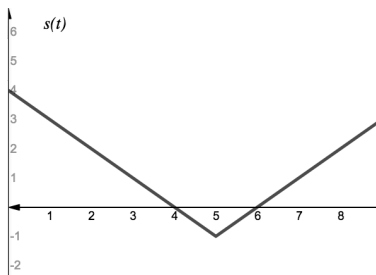
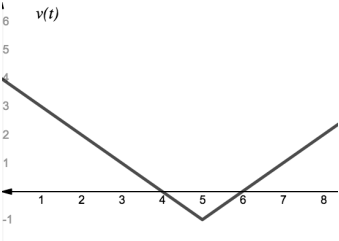


Directions: In this set of exercises, position, velocity, and acceleration are denoted $s(t)$, $v(t)$ and $a(t)$, respectively. Begin in cell #1. Show the work necessary to answer the question. Circle your answer, search for your answer, and call that cell #2. Continue in this manner until you complete the circuit. None of these problems require the use of a calculator.

<p>Answer: 9 # <u>1</u> If $s(t) = -5t^2 + 10t + 3$, find $v(2)$.</p>	<p>Answer: 8 # _____ The function $s(t) = -3 \ln t + t$ gives the position of a toy car going back and forth on a straight track. for $t > 0$. Is the toy car speeding up or slowing down at $t = 6$?</p>														
<p>Answer: 1 # _____ Find $a(7)$ given the piecewise linear graph of $s(t)$:</p> 	<p>Answer: $-\frac{1}{27}$ # _____ A particle travels horizontally along the x-axis such that its position at any time t, $0 \leq t \leq 5$, is given by $s(t) = t^2 - 3t$. Find the velocity the first time the position is -2.</p>														
<p>Answer: -10 # _____ If $v(t) = 3t^2 - 8t + 7$, find $a(1)$.</p>	<p>Answer: 10 # _____ Find the position the moment velocity equals zero... $s(t) = \frac{1}{t^2 - 4t}$.</p>														
<p>Answer: -2 # _____ If $s(t) = \frac{1}{3}t^3 - 2t^2 + 7$, find $a(3)$.</p>	<p>Answer: 0 # _____ The following table gives the velocity of a vehicle at different moments in time. What is the average acceleration for the vehicle from $t = 3$ to $t = 10$?</p> <table border="1" data-bbox="824 1686 1528 1766"> <tbody> <tr> <td>t</td> <td>3</td> <td>5</td> <td>7</td> <td>8</td> <td>9</td> <td>10</td> </tr> <tr> <td>$v(t)$</td> <td>5</td> <td>6</td> <td>10</td> <td>20</td> <td>25</td> <td>40</td> </tr> </tbody> </table>	t	3	5	7	8	9	10	$v(t)$	5	6	10	20	25	40
t	3	5	7	8	9	10									
$v(t)$	5	6	10	20	25	40									

<p>Answer: 6 # _____ Let $s(t) = \frac{1}{3}t^3 - t$ be the position of a particle for $t \geq 0$. At time $t = \frac{1}{2}$ is the particle speeding up or slowing down? Explain how you know.</p>	<p>Answer: 2 # _____ Given $s(t) = 6t\sqrt{t}$, find $v(4)$.</p>
<p>Answer: 30 # _____ If $a(t) = 6t - 12$, $v(0) = 3$, and $s(0) = 11$, Find $s(1)$.</p>	<p>Answer: $-\frac{1}{4}$ # _____ Find the acceleration for the piecewise defined velocity function $v(t) = \begin{cases} t^2 - 4, & 0 \leq t < 2 \\ 4 \ln(t - 1), & t \geq 2 \end{cases}$ when the velocity equals zero.</p>
<p>Answer: 18 # _____ If $s(t) = \sqrt{2t + 3}$, find $a(3)$.</p>	<p>Answer: 5 # _____ If $s(t) = (t - 2)(t^2 + 2t + 4)$, find $a(5)$.</p>
<p>Answer: speeding up because velocity and acceleration are both positive at the given time # _____ Find $a(7)$ given the piecewise linear graph of $v(t)$:</p> 	<p>Answer: 4 # _____ What is the initial velocity for $s(t) = 7e^t + 7 - t$?</p>
<p>Answer: -1 # _____ What is the speed at $t = 3$ if $s(t) = \frac{10}{\pi} \sin(\pi t)$?</p>	<p>Answer: slowing down because the velocity and acceleration are opposite in sign at that time # _____ Find the acceleration at time $t = \frac{5\pi}{4}$ if $s(t) = 2 \tan t$.</p>