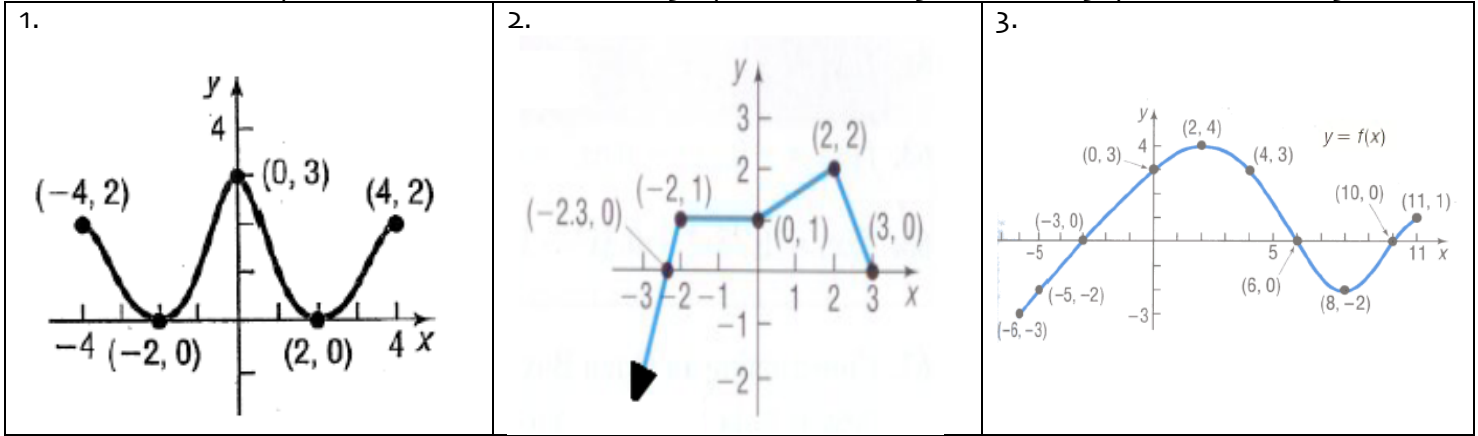


Function Analysis HW

I. Determine the open intervals on which the graph is increasing, decreasing, positive and negative.



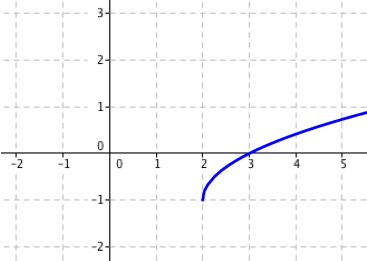
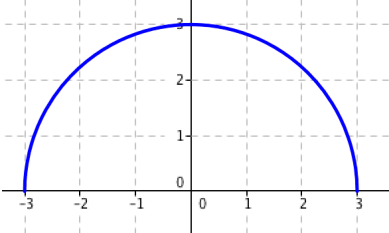
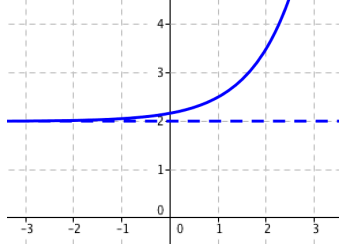
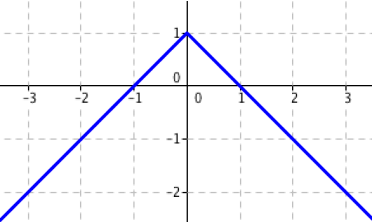
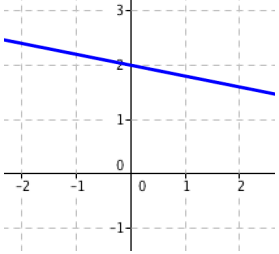
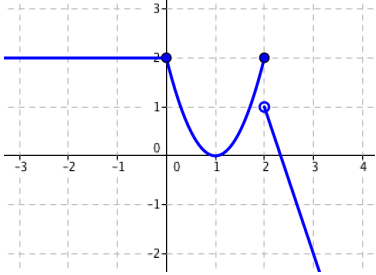
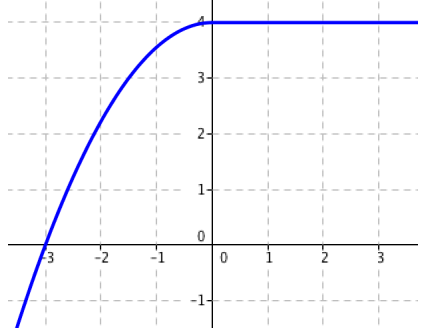
II. Sketch the function. Then determine the open intervals on which the function is increasing, decreasing, positive and negative.

<p>4. $y = \sqrt{x-2} - 1$</p>	<p>5. $y = \sqrt{9-x^2}$</p>	<p>6. $y = \frac{1}{2} \cdot 3^{x-1} + 2$</p>
<p>7. $y = 1 - x$</p>	<p>8. $y = -\frac{1}{5}x + 2$</p>	<p>9. $y = \begin{cases} 2, & x < 0 \\ 2(x-1)^2, & 0 \leq x \leq 2 \\ -3x+7, & x > 2 \end{cases}$</p>

III. Sketch a function with the given characteristics. (*There are many correct answers.)

<p>10.</p> <ul style="list-style-type: none"> • Increasing: $(-\infty, 0)$ • Decreasing: never • Positive: $(-3, \infty)$ • Negative: $(-\infty, -3)$ • $f(0) = 4$ 	<p>11.</p> <ul style="list-style-type: none"> • Increasing: $(0, \frac{10}{3})$ • Decreasing: $(-\infty, 0) \cup (\frac{10}{3}, \infty)$ • Positive: $(-\infty, 0) \cup (0, 5)$ • Negative: $(5, \infty)$
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ANSWERS

<p>1. increasing: $(-2,0) \cup (2,4)$ decreasing: $(-4,-2) \cup (0,2)$ positive: $(-4,-2) \cup (-2,2) \cup (2,4)$ negative: never</p>	<p>2. increasing: $(-\infty,-2) \cup (0,2)$ decreasing: $(2,3)$ positive: $(-2.3,3)$ negative: $(-\infty,-2.3)$</p>	<p>3. increasing: $(-6,2) \cup (8,11)$ decreasing: $(2,8)$ positive: $(-3,6) \cup (10,11)$ negative: $(-6,-3) \cup (6,10)$</p>
<p>4.</p>  <p>increasing: $(2,\infty)$ decreasing: never positive: $(3,\infty)$ negative: $(2,3)$</p>	<p>5.</p>  <p>increasing: $(-3,0)$ decreasing: $(0,3)$ positive: $(-3,3)$ negative: never</p>	<p>6.</p>  <p>increasing: $(-\infty,\infty)$ decreasing: never positive: $(-\infty,\infty)$ negative: never</p>
<p>7.</p>  <p>increasing: $(-\infty,0)$ decreasing: $(0,\infty)$ positive: $(-1,1)$ negative: $(-\infty,-1) \cup (1,\infty)$</p>	<p>8.</p>  <p>increasing: never decreasing: $(-\infty,\infty)$ positive: $(-\infty,10)$ negative: $(10,\infty)$</p>	<p>9.</p>  <p>increasing: $(1,2)$ decreasing: $(0,1) \cup (2,\infty)$ positive: $(-\infty,1) \cup (1,\frac{7}{3})$ negative: $(\frac{7}{3},\infty)$</p>
<p>10.</p> 	<p>11.</p> 