

Classwork 2  
Precalculus MTH 130  
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Name: SOLUTIONS

1. Find the domain of the function  $f(x) = \sqrt{15 - 2x - x^2}$ . □

$$15 - 2x - x^2 = 0$$

$$-(x^2 + 2x - 15) = 0$$

$$-(x+5)(x-3) = 0$$

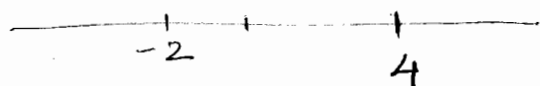
$$x = 3, -5$$

|                          | $x < -5$           | $-5 < x < 3$ | $x > 3$  |
|--------------------------|--------------------|--------------|----------|
| Test pt                  | $x = -6$           | $x = 0$      | $x = 4$  |
| Value of $15 - 2x - x^2$ | $-9 < 0$           | $15 > 0$     | $-9 < 0$ |
| Domain:                  | $-5 \leq x \leq 3$ |              |          |

2. Find the domain of the function  $\sqrt{\frac{x+2}{4-x}}$ . □

$$x+2=0, x=-2$$

$$4-x=0, x=4$$



|                         | $x < -2$           | $-2 < x < 4$      | $x > 4$  |
|-------------------------|--------------------|-------------------|----------|
| Test pt                 | $x = -3$           | $0$               | $x = 5$  |
| Value $\frac{x+2}{4-x}$ | $\frac{-1}{7} < 0$ | $\frac{2}{4} > 0$ | $-7 < 0$ |

Domain:  $-2 \leq x < 4$  ( $x \neq 4$ ).

3. Find the vertex  $(h, k)$  for the graph  $y = x^2 - 4x + 7$  and use it to put the quadratic function in the standard form. Does this function have a maximum or minimum? Find the value. □

$$b = -4, a = 1$$

$$h = \frac{-b}{2a} = 2, k = f(2) = 3$$

Vertex =  $(2, 3)$

Standard form:  $y = (x-2)^2 + 3$

$a = 1 > 0 \Rightarrow$  minimum

Value =  $k = 3$ .