Practice Test Quiz 3

1.

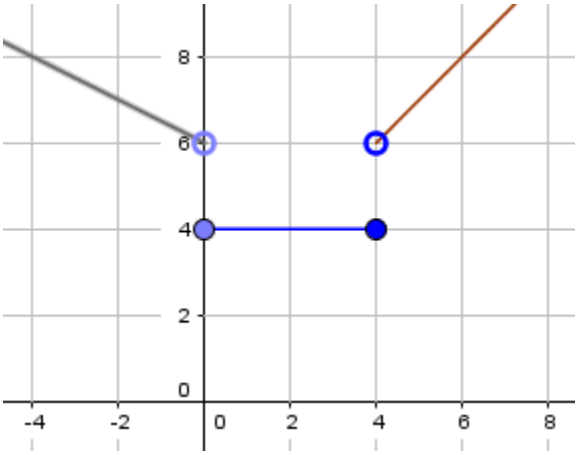
Given two complex numbers $z_1 = \frac{a+b}{2}$,

$z_2 = b + 2bi$, and $2z_1 - z_2 = 3 + i\sqrt{3}$,

(a) Find z_1 and z_2

(b) Calculate the product of $z_1 z_2$

2. Given a graph below, write a piecewise defined function (assumed each segment can be represented by a linear function), the entire real number line is the domain.



3. Assume $f(x)$ is a 4th degree polynomial and all coefficients of $f(x)$ are real numbers. If $f(x)$ has 1, -3, and i as zeros and $f(0) = 6$.
Find f(x) (in general form)

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4. Find and graph $(f \circ g)(x)$, also identify the domain, x and y intercepts of the composite function if $f(x) = -1 + \sqrt{x}$, $g(x) = x - 2$

5. Use the same functions from question 4 and find and graph $(g \circ f)(x)$, also identify the domain, x and y intercepts of the composite function.

6. Find all possible zeros of $f(x)$, if $f(x) = x^4 - 4x^2 - 3$. Graph the zeros of $f(x)$ on the complex plane.