Algebra II | Homework 1117 | Name:
Dr. Paul L. Bailey | Wednesday, November 17, 2021

Due Thursday, November 18, 2021. Write all complex numbers and polynomials in standard form. Do not copy. Do not write anything you do not understand.

Problem 1. Solve the following polynomial equations. Write the solution set.

(a) $x^2 - 25 = 0$

(b) $8x - 3x^2 = 0$

(c) $x^2 - 7x + 5 = 0$

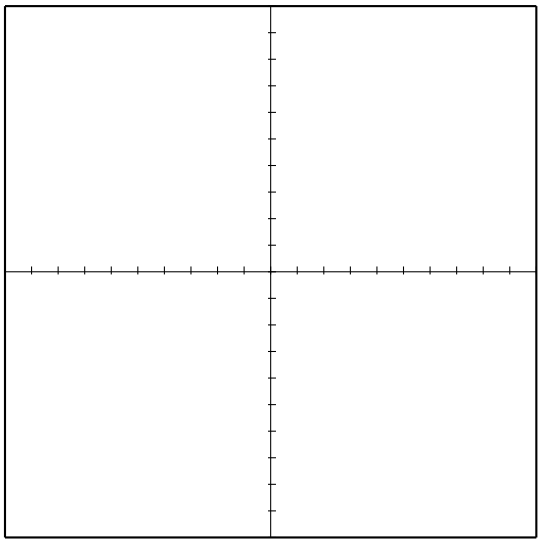
(d) $(x-1)(x-3)^2(x-5)^3 = 0$

(e) $x^2 - 7x = 30$

(f) $x^2 - 7x + 30 = 0$

Problem 2. Find the degree, leading coefficient, constant coefficient, zeros, intercepts, and shape of the function f. Use the intercepts and the shape to sketch the graph of the equation $y = f(x)$. Note that

$$f(x) = x^3 + 3x^2 - 9x + 5 = (x+5)(x-1)^2.$$



Polynomial: $f(x) = (x+5)(x-1)^2$

Degree:

Leading Coefficient:

Constant Coefficient:

Zeros:

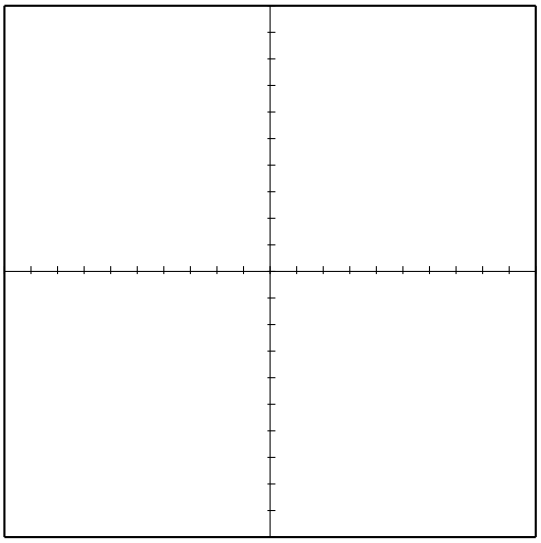
y-intercept:

x-intercepts:

End Behavior:

Problem 3. Find the degree, leading coefficient, constant coefficient, zeros, intercepts, and shape of the function f. Use the intercepts and the shape to sketch the graph of the equation $y = f(x)$.

(a) Factor Out x



Polynomial: $f(x) = x^3 - 4x$

Degree:

Leading Coefficient:

Constant Coefficient:

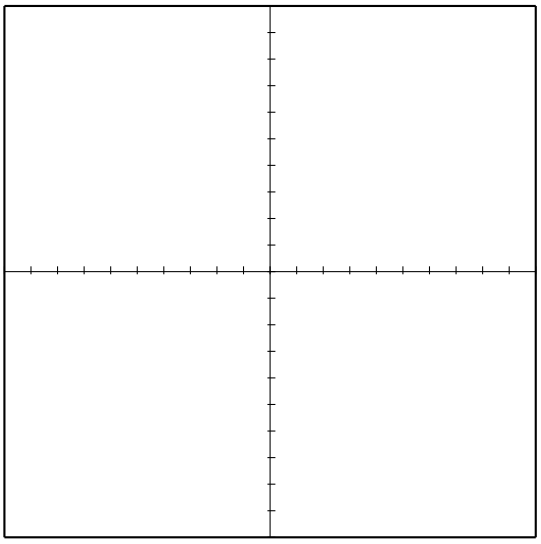
Zeros:

y-intercept:

x-intercepts:

End Behavior:

(b) Factor by Grouping



Polynomial: $f(x) = x^3 - 7x^2 - x + 7$

Degree:

Leading Coefficient:

Constant Coefficient:

Zeros:

y-intercept:

x-intercepts:

End Behavior: