1.8 Graphing Polynomial Functions Jacob Zante September 26th, 2024

y = (x-1)(x+4)

1. State the degree, leading coefficient, x-intercepts, and graph the following functions: a) y = (x-1)(x+4)

x-ints: x = 1:: order 1, x = -4: order 1

degree: 2

leading coefficient: +

-10-6-2**b)** $y = -(x-1)^3(x+4)(x-5)^2$ x-ints: x = 1: order 3, x = -4: order 1, x = 5: order 2 degree: 6 leading coefficient: _ $y = -(x-1)^3(x+4)(x-5)^2$ 6,000 5,000

4,000 -3,000 2,000 -1-,000--10-8 -6-4-21,000

2,000

-3,000

-4,000

-5,000

-6,000

x-ints: x = -3: order 2, x = 2: order 2, x = -1: order 3, x = -5: order 1

 $y = (x+3)^2(x-2)^2(x+1)^3(x+5)$

 $-y = x^2(x-3)^2$

15

-2,500

10

8

10

2,000 1,500 1,000 -500--10 $\frac{1}{2}$ -8 -6-500 -1-,000--1,500--2,000 -2,500

x-ints: x = 0: order 2, x = 3: order 2

d) $y = x^2(x-3)^2$

leading coefficient: +

degree: 4

c) $y = (x+3)^2(x-2)^2(x+1)^3(x+5)$

degree: 8

 $leading\ coefficie \underline{nt\colon +}$

-10-10 -15 -20-↓ e) $y = (x-2)^3(x+1)(x+5)^2$

f) $y = (x-2)^2(x+2)^2$