

HW 2.6, 2.7, 3.2A, 3.2B } Due Sunday 9/24
Quiz 2

Quiz 3 due Monday 9/25

Exam 1 (Chapter 2 & sec. 3.2) on Monday 9/25

↳ Review on Saturday 9/23, 10AM-noon in MMC

↳ Online office hour on Sunday 9/24, CP 145
7-8 PM

Please send me an email if you want to see a specific problem solved.

↳ The exam will have 4 multiple choice questions and 8 open ended questions.

Review: Transformations:

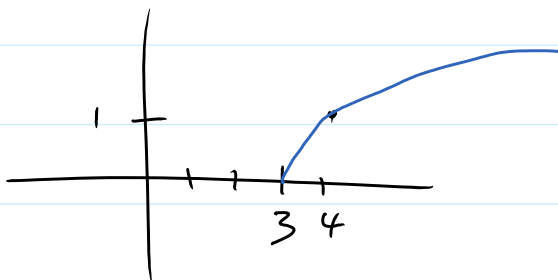
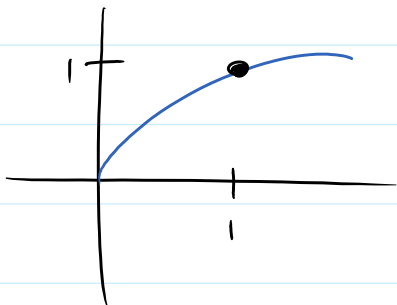
- 1) horizontal shift
- 2) hor. shrink/stretch
- 3) (hor) reflection ^{about the y-axis}
- 4) vertical shrink/stretch
- 5) (vertical) reflection ^{about the x-axis}
- 6) vertical shift

$$y = -\sqrt{2x-3} + 1$$

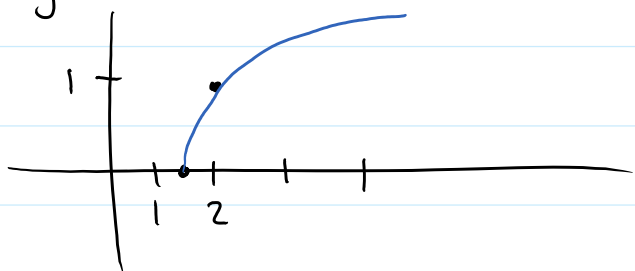
→ by 3

6) vertical shift

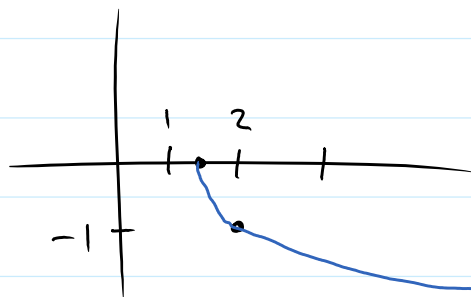
\sqrt{x} \rightarrow by 3 \rightarrow



$y = \sqrt{2x-3}$ \leftarrow by factor of 2 \rightarrow

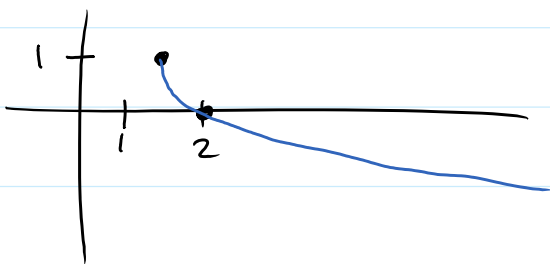


$y = -\sqrt{2x-3}$



reflection about the x-axis

$y = -\sqrt{2x-3} + 1$ \leftarrow by one \rightarrow



Section 3.2

$$y = -x^2 (x-2)^2 = -x \cdot x (x-2) (x-2)$$

degree is 4 } end behavior: \downarrow \downarrow
leading coeff: -1

| zero | multiplicity |
|------|--------------|
| 0 | 2 |
| 2 | 2 |

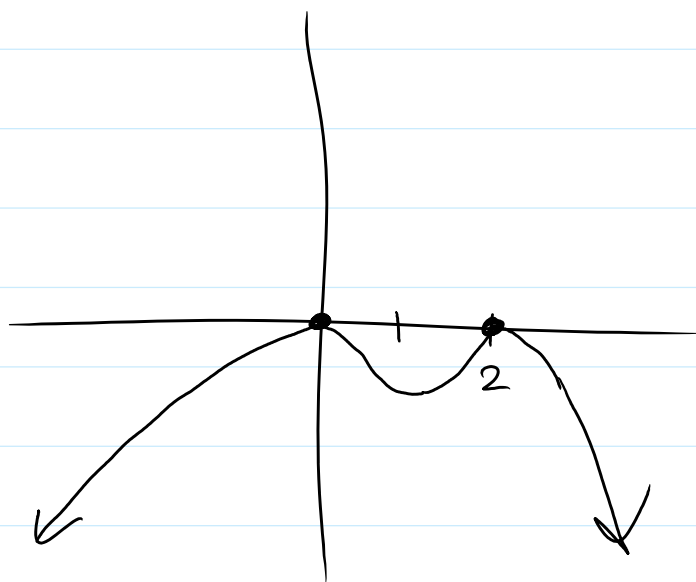
$$x=0 \rightarrow x=0$$

$$x-2=0 \rightarrow x=2$$

Thm: If r is a zero of even multiplicity, then the graph touches the x -axis and turns around at r .

If r is a zero of odd multiplicity, then the graph crosses the x -axis at r .

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



Plot: $y = \frac{1}{2} \underbrace{(x+1)^1}_{(1)} \underbrace{(2x-3)^2}_{(2)}$

Plot: $y = \frac{1}{2} (x+1)(2x-3)$

$$2x-3=0$$

$$2x=3$$

$$x = \frac{3}{2}$$

| zero | multip. |
|---------------------|---------|
| $1.5 = \frac{3}{2}$ | 2 |
| -1 | 1 |

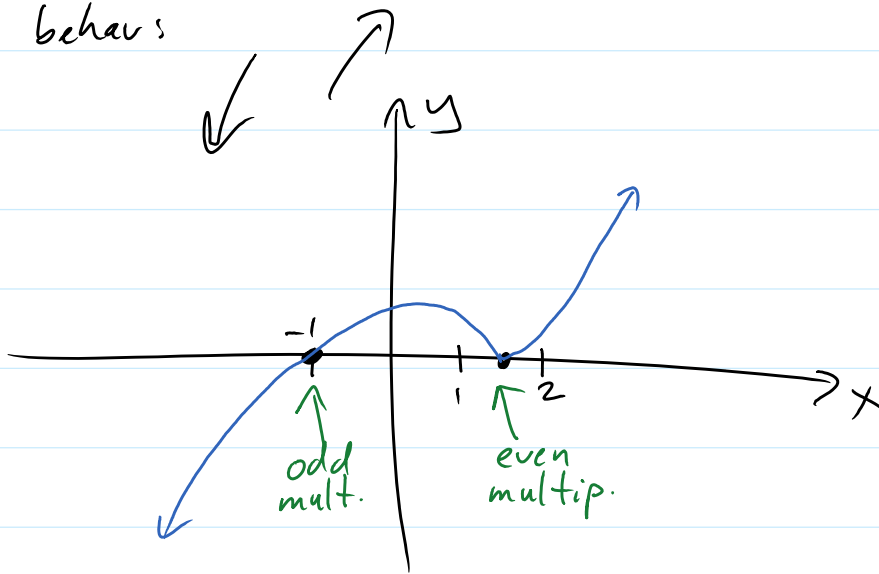
$$x+1=0$$

$$x = -1$$

degree is 3

leading coet: $2 = \frac{1}{2} \cdot 1 \cdot 2^2$

end behav



Plot: $y = x^4 - 2x^2 + 1$
 $= (x^2)^2 - 2(x^2) + 1$

$$u = x^2$$

$$= u^2 - 2u + 1$$

$$= (u-1)(u-1) = (u-1)^2$$

$$= (x^2-1)^2 = ((x-1)(x+1))^2 = (x-1)^2(x+1)^2$$

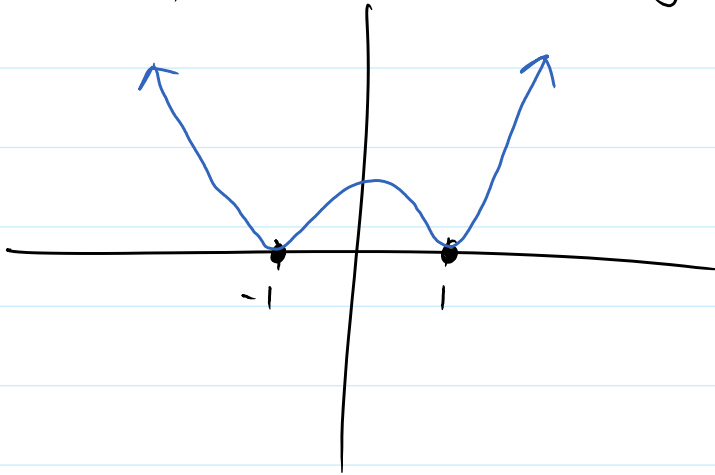
$$x-1=0 \quad x+1=0$$

| zero | multip |
|------|--------|
| 1 | 2 |
| -1 | 2 |

$$x-1=0 \quad x+1=0$$

$$x=1 \quad x=-1$$

degree: 4
leading coef: 1



Plot: $y = -2(x-1)^2(x+2)$

$$x-1=0 \quad x+2=0$$

$$x=1 \quad x=-2$$

| zero | multip |
|------|--------|
| 1 | 2 |
| -2 | 1 |

degree: $2+1=3$
leading coef: -2

end beh.

