Week 2 Tuesday

January 15, 2019 8:25 AM

Quiz $2x^2 - 5x + 3 = 0$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$= \frac{5 \pm \sqrt{25 - 4(2)(3)}}{4}$$

$$= \frac{5 \pm \sqrt{1}}{4}$$

$$= \frac{5 \pm 1}{4}$$

$$= \frac{6}{4}, \frac{4}{4} \quad \text{or} \quad \frac{3}{2}, 1$$

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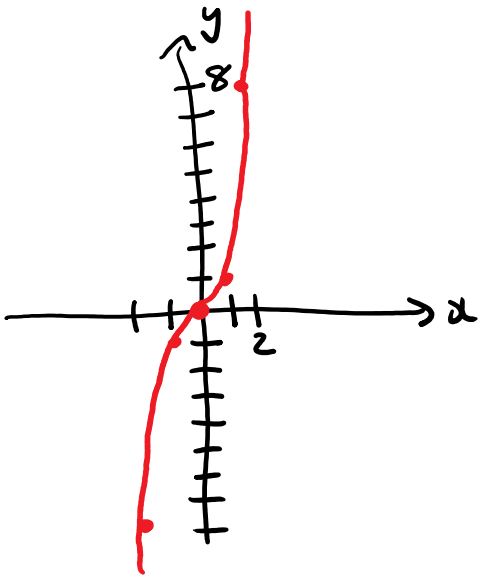
## 2.2 Cont'd

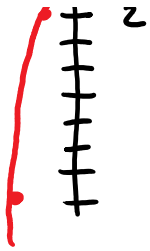
* Some common graphs
* Symmetry

**Ex:** Graph $y = x^3$

| $x$ | $y = x^3$ |
|---|---|
| $-2$ | $-8$ |
| $-1$ | $-1$ |
| $0$ | $0$ |
| $1$ | $1$ |
| $2$ | $8$ |

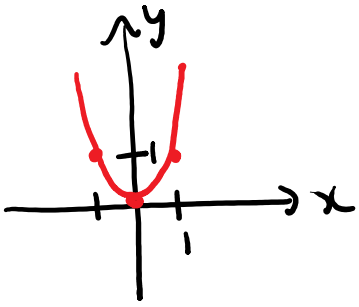


| | |
|---|---|
| 0 | 0 |
| 1 | 1 |
| 2 | 8 |




**Ex:** Graph $y = x^2$

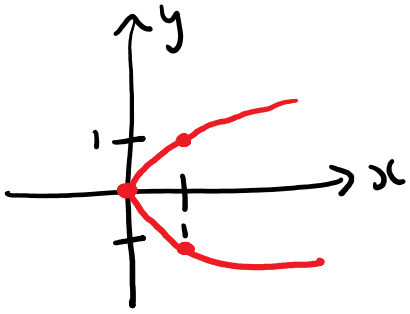
| $x$ | $y = x^2$ |
|---|---|
| $-1$ | 1 |
| 0 | 0 |
| 1 | 1 |




**Ex:** Graph $x = y^2$ (Special Case)

| $y$ | $x = y^2$ |
|---|---|
| $-1$ | 1 |
| 0 | 0 |
| 1 | 1 |

$(x, y) = (1, -1)$

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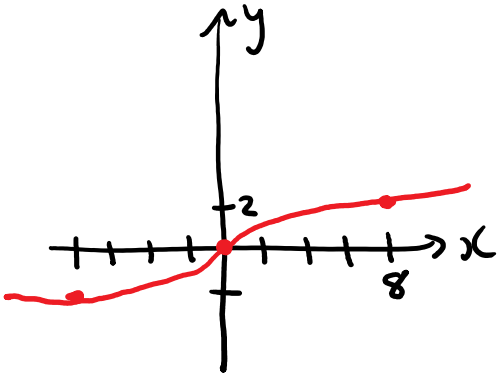
**Ex:** Graph $y = \sqrt[3]{x}$

| $x$ | $y = \sqrt[3]{x}$ |
|---|---|
| 8 | 2 |
| 0 | 0 |
| $-8$ | $-2$ |

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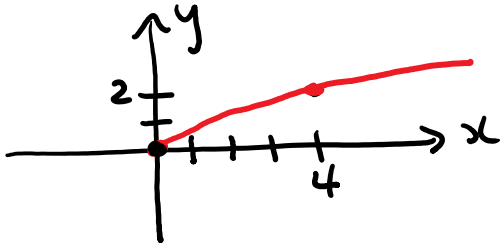
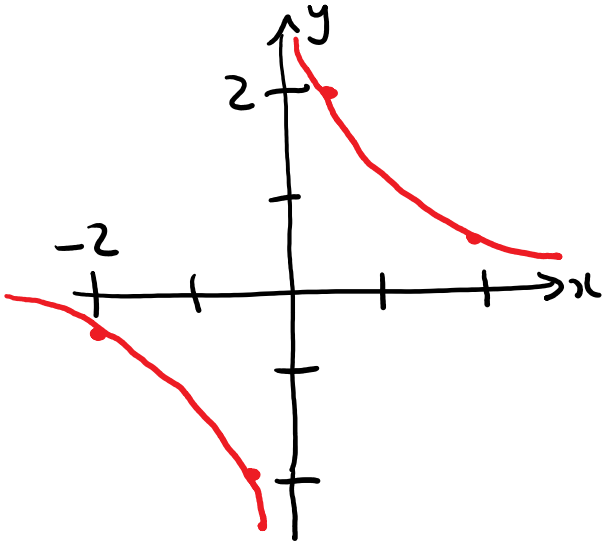
**Ex:** Graph $y = \sqrt{x}$

| $x$ | $y=\sqrt{x}$ |
|---|---|
| negative | undefined (imaginary) |
| 0 | 0 |
| 4 | 2 |

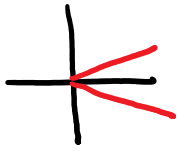


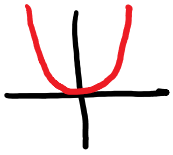

Ex: Graph $y=\frac{1}{x}$

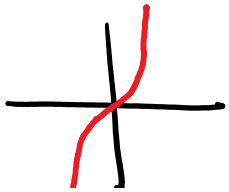
| $x$ | $y=\frac{1}{x}$ |
|---|---|
| $-2$ | $-\frac{1}{2}$ |
| $-\frac{1}{2}$ | $-2$ |
| 0 | undefined |
| $\frac{1}{2}$ | 2 |
| 2 | $\frac{1}{2}$ |




## Symmetry

Symmetric about x-axis 

" y-axis 

" origin 

(Unchanged when rotated 180°)

(Unchanged when rotated 180°)

## Testing for Symmetry

about x-axis : Replacing y with -y gives original equation

y-axis : " x with -x "

origin : " x with -x and y with -y "

**Ex:** Test $x = y^4$ for symmetry

1) x-axis : $y \to -y$

$x = (-y)^4$

$x = y^4$ ✓

Symm. about x-axis

2) y-axis : $x \to -x$

$-x = y^4$ ✗

3) origin : $x \to -x$, $y \to -y$

$-x = (-y)^4$

$-x = y^4$ ✗

Symm. about x-axis only