

$$\int_{-1}^{10} f(x) = 4$$

$$\int_{10}^3 f(x) = 7$$

$$\int_{-1}^3 f(x) =$$

$$\int_{-1}^3 + \textcircled{-1} \int_3^{10} = \int_{-1}^{10}$$

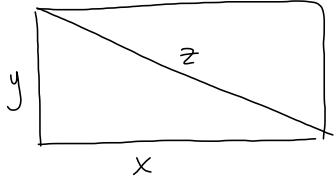
$$x - 7 = 4$$

36. Avg. Value:

$$\frac{1}{b-a} \int_a^b f(x) dx$$

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

46.



$$\frac{dz}{dt} = 1$$

$$x^2 + y^2 = z^2$$

$$\frac{dx}{dt} = 3 \frac{dy}{dt}$$

$$\frac{dx}{dt} = 1$$

$x = 4$
 $y = 3$
 $z = 5$

$$\cancel{x} \frac{dx}{dt} + \cancel{y} \frac{dy}{dt} = \cancel{z} \frac{dz}{dt}$$

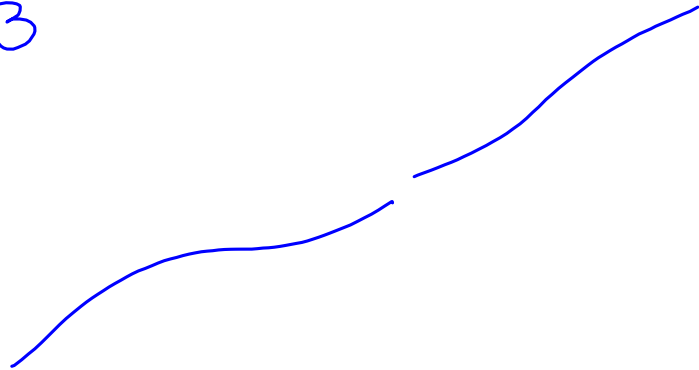
$$x \frac{dx}{dt} + y \frac{dy}{dt} = z \frac{dz}{dt}$$

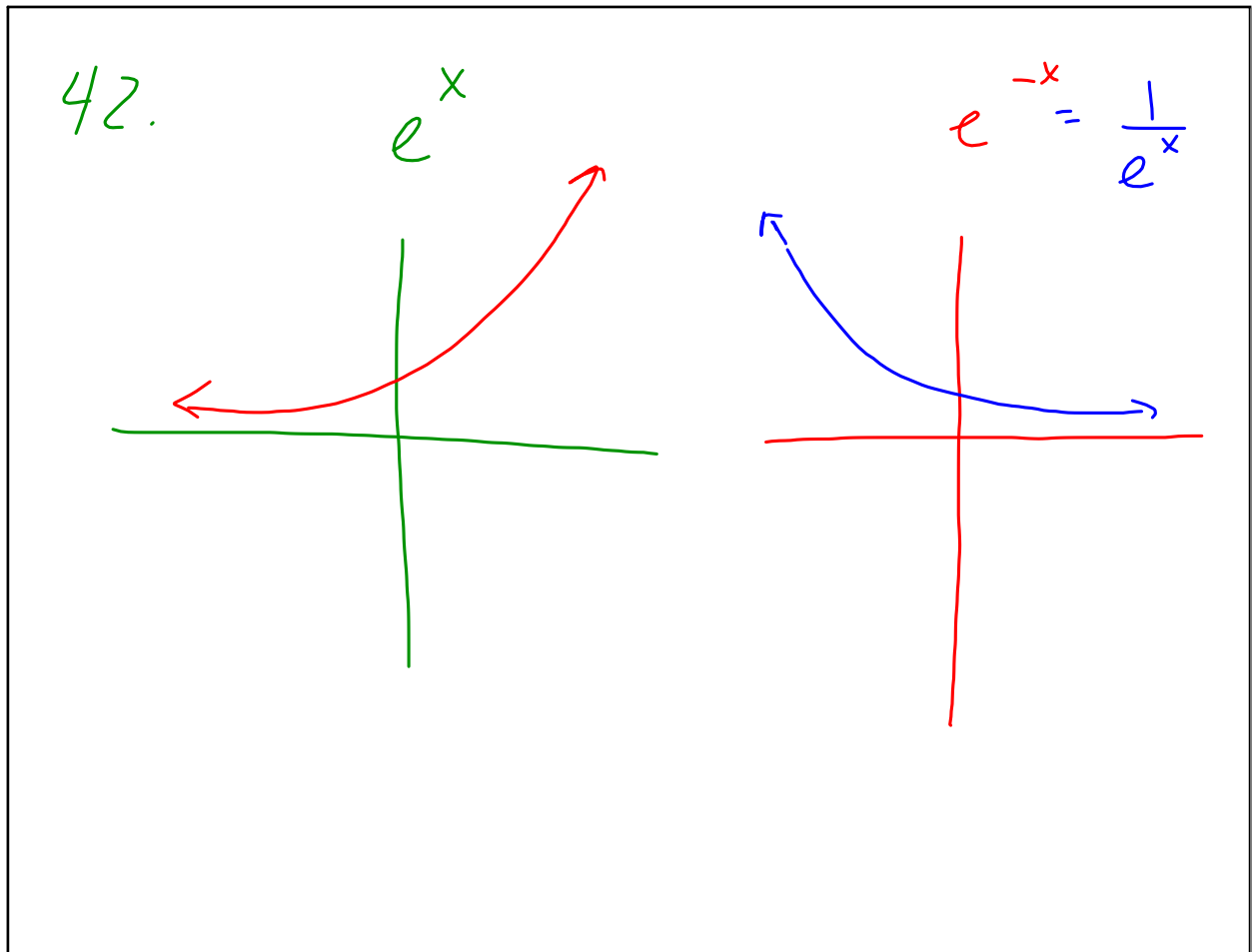
$$4(3 \frac{dy}{dt}) + 3 \frac{dy}{dt} = 5(1)$$

$$15 \frac{dy}{dt} = 5$$

$$\frac{dy}{dt} = \frac{1}{3}$$

41

$$\lim_{x \rightarrow 3} f(x) = 7$$




44.

$e \sqrt[3]{en}$

$f(-x) = f(x)$

$f(-x) = -f(x)$

$\frac{d}{dt}$

$f(x) = x^3$

$g(x) = x^3$

$f(g(x)) = (x^3)^3$

$f(x) + g(x) = x + x^3$

$(-x) + (-x)^3$

$-x - x^3$

$f(x) \cdot g(x) = x \cdot x^3 = x^4$

45. $V = 16\pi = \pi r^2 h$ $h = \frac{16\pi}{\pi r^2} = \frac{16}{r^2}$

$SA = 2\pi r^2 + 2\pi r h$

$SA = 2\pi r^2 + 2\pi r \left(\frac{16}{r^2}\right)$

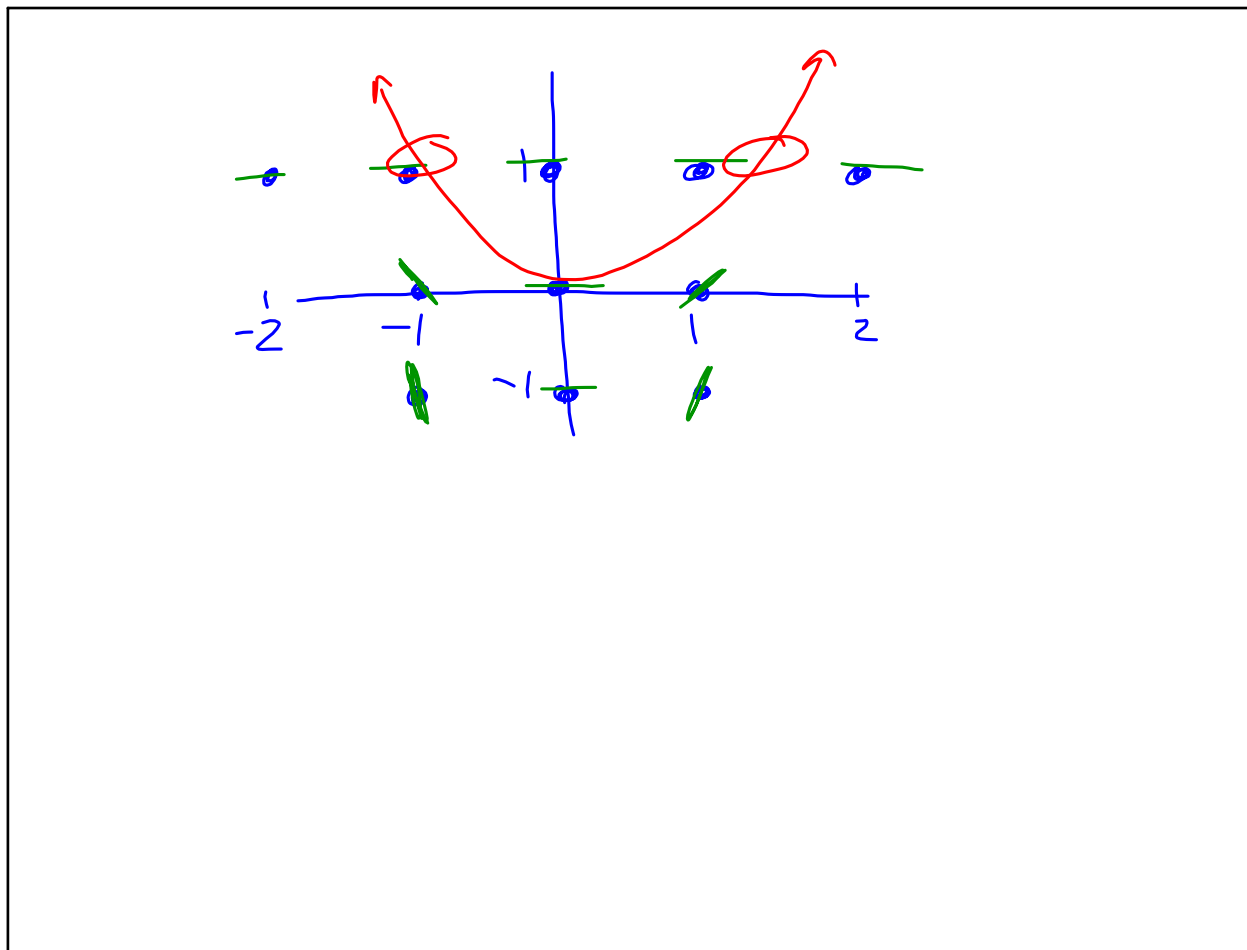
$SA = 2\pi r^2 + \frac{32\pi}{r}$

$SA' = \frac{4\pi r^3}{r^2} - \frac{32\pi}{r^2} = 0$

$r = 0$ $\frac{4\pi r^3 - 32\pi}{r^2} = 0$

$4\pi(r^3 - 8) = 0$

$r = 2$



$$\frac{dy}{dx} = x(y-1)^2$$

(1) $\int \frac{dy}{(y-1)^2} = \int x dx$

(1) $\int (y-1)^{-2} dy = \frac{x^2}{2} + C$

(1) $\frac{(y-1)^{-1}}{-1} = \frac{x^2}{2} + C$

$\frac{(-1-1)^{-1}}{-1} = \frac{0}{2} + C$

$\frac{1}{2} = C$

(1) $\frac{-1}{(y-1)} = \frac{x^2}{2} + \frac{1}{2}$

$\frac{-1}{y-1} = \frac{x^2+1}{2}$

$\frac{dy-1}{dx} = \frac{-2}{x^2+1}$

$y = \frac{-2}{x^2+1} + 1$

$-1 \leq y < 1$

$[-1, 1)$

