0-3

1 a) 1) $100^{-\frac{1}{2}} \Leftrightarrow \frac{1}{\sqrt{100}} = \frac{1}{10}$

b) 2) * $2\log_2(2020) \Leftrightarrow 2\log_2(2\cdot 1010) \Leftrightarrow 2\log_2(2\cdot 10\cdot 101)$

$\Leftrightarrow 2\log_2(2^2\cdot 5\cdot 101)$

$2\log_2(2^2) + 2\log_2(505) \Leftrightarrow 4 + 2\log_2(505) \Rightarrow 4 + \log_2(505^2)$

c) 3) ~~$\sin(-2020\pi) = \sin(-2\cdot 5\cdot 2\cdot 101\pi) = \sin(-5\cdot 101\pi)$~~

~~$\sin(4\pi + \ldots$~~

~~$\sin(\pi)($~~

~~$-2\cdot 10\cdot 101\pi$~~

~~$-2\cdot 10(50+\frac{1}{2})\cdot 2\cdot\pi$~~

~~$\frac{101}{2} = 50 + \frac{1}{2}$~~ ~~$8\cdot 5(50) + (50+\frac{1}{2})\pi = \frac{1}{2}\pi$~~

$\sin(-2020\pi) = \sin(0 + 2\cdot -1010\pi) = 0$

4) $\sqrt{y^2} = y \quad y \in \{\mathbb{R}\}$

5) $(\sqrt{y})^2 = (y^{\frac{1}{2}})^2 = y^{\frac{2}{2}} = y \quad * \; y \geq 0$

2) $\frac{1}{(x-0,5)(x+3)}$ ikke definert for $x = 0,5$ og $x = -3$

3 a)

$$x^2 - 6x + y^2 - 2y + 7 = 0$$

$$x^2 - 6x + 9 + y^2 - 2y + 1 = 0 + 9 - 7 + 1$$

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

$$\underline{x_0 = 3}$$

$$\underline{y_0 = 1}$$

$$\underline{\underline{r = \sqrt{3}}}$$

b) Bruker fullstendig kvadrat for å gjøre om til formen $(x-x_0)^2 + (y-y_0)^2 = r^2$ ~~Og~~ som er tilsvarende til en sirkel, er dette mulig, er det en sirkel

4 a)

$$\cos(x) = -1$$

$$\underline{\underline{x = \pi + 2\pi k}}$$

b)

~~$\cos(2x) = 1 - 2\sin^2(x)$~~ $\quad \Big| + 2\cos^2(x)$

~~$\cos(2x) + 2\cos^2(x) = 1 - 2$~~

$$-2\cos^2(x) + \cos(2x) + 1 = 0$$

$$\cos(2x) = \cos^2 x - \sin^2 x$$

$$\cos^2 x + \sin^2 x = 1$$

$$\cos(2x) = 1 - 2\sin^2(x)$$

$$\cos^2 x - \sin^2 x = 1 - 2\sin^2(x)$$

$$\frac{d}{dx}(1 = 1)$$

$$\underline{\underline{= 0}}$$

4

c)

$$\cos(2a) = \cos^2(a) - \sin^2(a)$$

$a = \frac{\pi}{8}$

$2a = \frac{\pi}{4}$

$$\cos(2a) = \downarrow$$

$$\cos^2(a) = \cos(2a) - \sin^2(a) \quad / + \cos^2(a)$$

$$2\cos^2(a) = \cos(2a) + 1$$

$$\cos^2(a) = \frac{\cos(2a)+1}{2}$$

$$\cos(a) = \pm\sqrt{\frac{\cos(2a)+1}{2}}$$

$$\cos\frac{\pi}{4} = \frac{\sqrt{2}}{2}$$

$$\cos\left(\frac{\pi}{8}\right) = \pm\sqrt{\frac{\frac{\sqrt{2}}{2}+1}{2}}$$

$$\cos\left(\frac{\pi}{8}\right) = \pm\sqrt{\frac{\frac{\sqrt{2}}{2}+\frac{2}{2}}{2}}$$

$$\cos\left(\frac{\pi}{8}\right) = \pm\sqrt{\frac{\sqrt{2}}{4}+\frac{1}{2}}$$

$$\cos\left(\frac{\pi}{8}\right) = \pm\sqrt{\frac{1}{4}(\sqrt{2}+2)}$$

$$\cos\left(\frac{\pi}{8}\right) = +\frac{1}{2}\sqrt{\sqrt{2}+2}$$

$$\cos\left(\frac{\pi}{8}\right) = -\frac{1}{2}\sqrt{\sqrt{2}+2}$$

$$\cos\left(\frac{\pi}{8}\right) = \pm\frac{1}{2}\sqrt{\sqrt{2}+2}$$

5

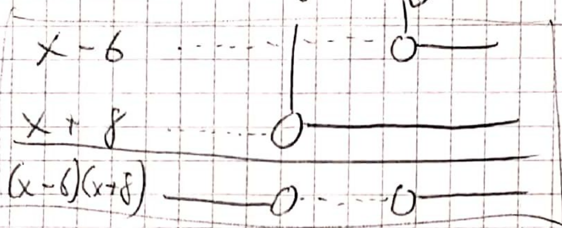
(a)

$x^2 + 2x + 2 > 50$

$x^2 + 2x - 48 > 0$

24 · 2
12 · 4
6 · 8

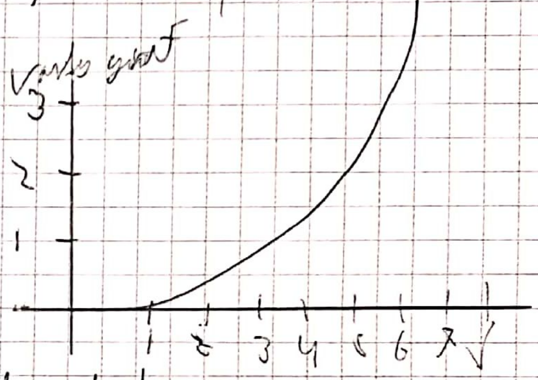
$(x-6)(x+8) > 0$



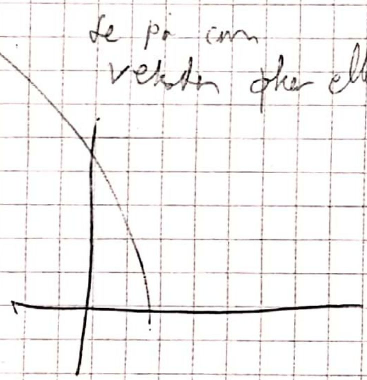
$x \in (-\infty, -8), (6, \infty)$ | $x < -8,\ x > 6$

6

a) antall coronasmittede (eksponentiell vekst) visst for a se på som veksten øker eller synke logaritmisk



b)



b)

$x = 2$, så er det $\ln x = 8$,

fordi eksempler

~~eks~~ eks om det er $\log_{10} x = 2$, så blir $x = 10^2$

Brukes