

# Øving 1

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MA0001 – 24. august 2021

1) a)  $-135^\circ = \frac{3}{4}\pi$   
b)  $\frac{3}{2}\pi = 270^\circ$   
c)  $\sin\left(\frac{-\pi}{2}\right) = -1$

2) a)  $2^3 - 3^2 = -1$   
b)  $\log_4(4^2) = 2$   
c)  $\ln(e^5) = 5$

3) a)  $1^{-1} + 2^{-1} + 3^{-1} = 1 + \frac{1}{2} + \frac{1}{3} = \frac{11}{6}$   
b)  $x^{-7} \cdot x^6 = \frac{1}{x}$   
c)  $\frac{(x^2yz^3)^2}{x^4y^3z^5} = \frac{x^4y^2z^6}{x^4y^3z^5} = \frac{z}{y}$   
d)  $\frac{e^{y-x}}{e^x \cdot e^y} = \frac{e^{y-x}}{e^{x+y}} = e^{(y-x)-(x+y)} = \frac{1}{e^{2x}}$   
e)  $\frac{z^2 - y^2}{z + y} = \frac{(z + y)(z - y)}{z + y} = z - y$

4) a)

$$3 + 2x = 2 - x$$

$$3x = -1$$

$$x = -\frac{1}{3}$$

b)

$$\begin{aligned}x^2 + x &= 3 \\x^2 + x + \left(\frac{1}{2}\right)^2 &= 3 + \left(\frac{1}{2}\right)^2 \\x^2 + x + \frac{1}{4} &= \frac{13}{4} \\\sqrt{\left(x + \frac{1}{2}\right)^2} &= \sqrt{\frac{13}{4}} \\x + \frac{1}{2} &= \pm \frac{\sqrt{13}}{4} \\x &= \frac{\pm\sqrt{13} - 1}{4}\end{aligned}$$

c)  $-x(x+2)(5x-4) = 0$

$$x = 0 \vee x = -2 \vee x = \frac{4}{5}$$

d)

$$\begin{aligned}\frac{x}{x+1} &= \frac{1}{3} + \frac{x-1}{3} \\3x &= 3(x+1) \cdot \left(\frac{1}{3}\right) + (x+1)(x-1) & x \neq -1 \\3x &= x+1+x^2-1 \\2x-x^2 &= 0 \\x(2-x) &= 0 \\x &= 0 \vee x = 2\end{aligned}$$

5