

## Plenum

6.1: 1b), g), h), 3a), b), 4, 5, 6, 9,

6.2: 2, 3, 5, 7, 8, 11, 13, 16, 20

6.3: 1a), d), f), 3a), b), d), e)

6.1: 1b), g), h), 3a), b), 10, 11a), 12

6.2: 2, 3, 5, 7, 8, 13, 16, 20

6.3: 1) a b c d e f, 3) a b d e g

NB: Gjorde feil oppg. først: De på dette arbeidet er riktige.

6.1: Derivasjon

1) b) Deriver funksjonene

$$f(x) = \frac{x}{\cos x} + e^x$$

$$\begin{aligned} f'(x) &= \frac{1}{\cos x} + x \frac{-1}{\cos^2 x} (-\sin x) + e^x \\ &= \frac{1}{\cos x} + \frac{x \sin x}{\cos^2 x} + e^x \left( = \frac{\cos x + x \sin x}{\cos^2 x} + e^x \right) \end{aligned}$$

g)  $f(x) = x \cos(\ln x)$

$$\begin{aligned} f'(x) &= \cos(\ln x) + x (-\sin(\ln x)) \frac{1}{x} \\ &= \cos(\ln x) - \sin(\ln x) \end{aligned}$$

h)  $f(x) = \frac{\cos(\sqrt{x})}{x^2}$

$$f'(x) = -\sin(\sqrt{x}) \frac{1}{2x^{\frac{1}{2}} x^2} + \frac{\cos(\sqrt{x}) (-2)}{x^3}$$

$$= \frac{-\sin(\sqrt{x})}{2x^{\frac{5}{2}}} - \frac{2\cos(\sqrt{x})}{x^3}$$

$$\left( = \frac{-x^2 \sin(\sqrt{x}) - 4x^{\frac{3}{2}} \cos(\sqrt{x})}{2x^{\frac{5}{2}}} \right)$$

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

$$(x^{-2})' = -2x^{-3}$$