Sek. 5.4

d) $\lim_{x \to 4} \frac{\sqrt{x} - 2}{x - 4} = \lim_{x \to 4} \frac{\sqrt{x} - 2}{(\sqrt{x} - 2)(\sqrt{x} + 2)}$

$= \lim_{x \to 4} \frac{1}{\sqrt{x} + 2} = \frac{1}{4}$

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: 1abcdef, 3)abdeg

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

7.1.8

6.1: Derivasjon

1) b) Deriver funksjonene

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

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

$$= \frac{1}{\cos x} + \frac{x\sin x}{\cos^2 x} + e^x \left(= \frac{\cos x + x\sin x}{\cos^2 x} + e^x\right)$$

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

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

$$= \cos(\ln x) - \sin(\ln x)$$

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

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

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

$$\left(= \frac{-x^2\sin(\sqrt{x}) - 4x^{\frac{3}{2}}\cos(\sqrt{x})}{2x^{\frac{9}{2}}}\right)$$

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

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