

S 109

$$1) 2 \cdot \left(2x - \frac{1}{2}y \right)^5$$

$$1(2x)^5 \left(-\frac{1}{2}y\right)^0 + 5(2x)^4 \left(-\frac{1}{2}y\right)^1 + 10(2x)^3 \left(-\frac{1}{2}y\right)^2 + 10(2x)^2 \left(-\frac{1}{2}y\right)^3 + 5(2x)^1 \left(-\frac{1}{2}y\right)^4 + 1(2x)^0 \left(-\frac{1}{2}y\right)^5$$

$$2 \cdot \left(32x^5 - 40x^4y + 20x^3y^2 - 5x^2y^3 + \frac{5}{8}xy^4 - \frac{1}{32}y^5 \right)$$
$$64x^5 - 80x^4y + 40x^3y^2 - 10x^2y^3 + \frac{5}{4}xy^4 - \frac{1}{16}y^5$$

$$2) (3i - 2)^4 = 1(3i)^4(-2)^0 + 4(3i)^3(-2)^1 + 6(3i)^2(-2)^2 + 4(3i)^1(-2)^3 + 1(3i)^0(-2)^4$$
$$81i^4 - 216i^3 + 216i^2 - 96i + 16$$
$$81 + 216i - 216 - 96i + 16 = -119 + 120i$$

$$(1 - 2i)^4 = 1 \cdot 1^4(-2i)^0 + 4 \cdot 1^3(-2i)^1 + 6 \cdot 1^2(-2i)^2 + 4 \cdot 1^1(-2i)^3 + 1 \cdot 1^0(-2i)^4$$
$$1 - 8i + 24i^2 - 32i^3 + 16i^4$$
$$1 - 8i - 24 + 32i + 16 = -7 + 24i$$

$$(i+3)^2 = i^2 + 6i + 9 = 8 + 6i$$

$$(3i - 2^4) - 2 \cdot (i+3)^2 \cdot (1-2i)^4$$

$$(-119 + 120i) - 2 \cdot (8 + 6i) \cdot (-7 + 24i)$$

$$-2 \cdot 2(4 + 3i) \cdot (-7 + 24i) = -4 \cdot (-28 + 96i - 21i - 72)$$

$$\Rightarrow (-119 + 120i) - 4 \cdot (-100 + 75i) = -119 + 120i + 400 - 300i = 281 - 180i$$

$$5) a) \quad 360 = 2 \cdot 180 = 2 \cdot 2 \cdot 90 = 2 \cdot 2 \cdot 2 \cdot 45 = 2 \cdot 2 \cdot 2 \cdot 3 \cdot 15 = 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3 \cdot 5$$

$$108 = 2 \cdot 54 = 2 \cdot 2 \cdot 27 = 2 \cdot 2 \cdot 3 \cdot 9 = 2 \cdot 2 \cdot 3 \cdot 3 \cdot 3$$

$$\text{ggT}(360, 108) = 2 \cdot 2 \cdot 3 \cdot 3 = 36$$

$$\text{kgV}(360, 108) = 2^3 \cdot 3^3 \cdot 5 = 8 \cdot 27 \cdot 5 = 1080$$

$\nearrow 108 \cdot 10$
 $\rightarrow 360 \cdot 3$

$$b) \quad 1260 = 2^2 \cdot 3^2 \cdot 5 \cdot 7 \qquad 1350 = 2 \cdot 3^3 \cdot 5^2$$

$$\text{ggT}(1260, 1350) = 2 \cdot 3^2 \cdot 5 = 90$$

$$\text{kgV}(1260, 1350) = 2^2 \cdot 3^3 \cdot 5^2 \cdot 7 = 18.900$$

$$f(x) = 3 - \frac{2}{x-2}, \quad \mathbb{D} = x \in \mathbb{R} \setminus \{2\}$$

$$\frac{\kappa}{\sigma} = \infty$$

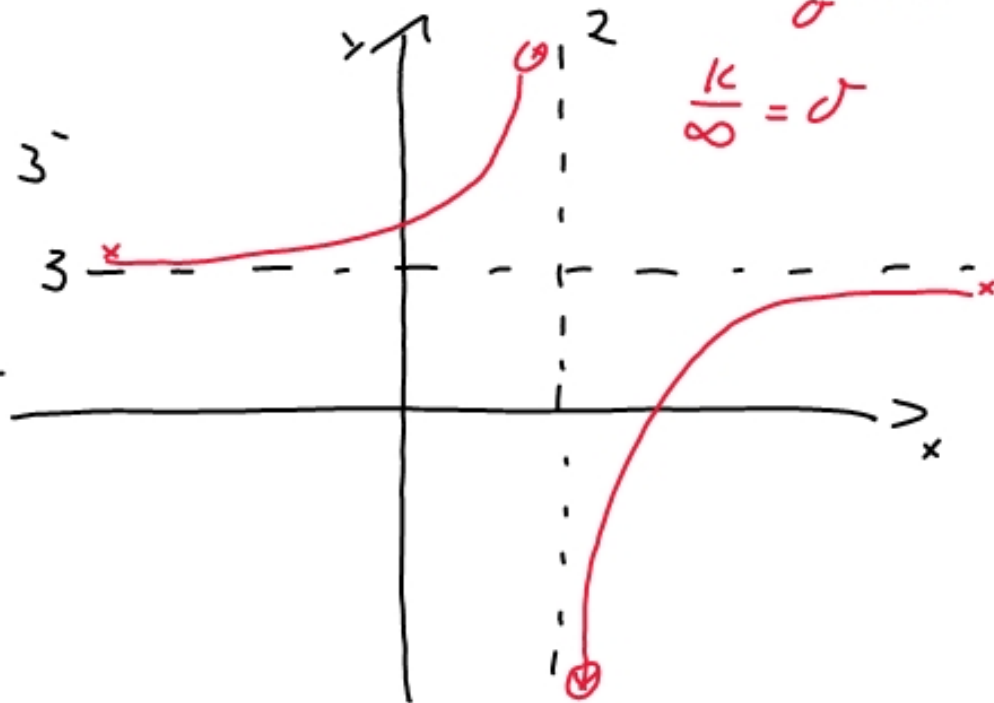
$$\frac{\kappa}{\sigma} = \sigma$$

$$\lim_{x \rightarrow \infty} f(x) = \left[3 - \frac{2}{\infty} \right] = 3^-$$

$$\lim_{x \rightarrow -\infty} f(x) = \left[3 - \frac{2}{-\infty} \right] = 3^+$$

$$\lim_{x \rightarrow 2^-} f(x) = \left[3 - \frac{2}{\sigma^-} \right] = \infty$$

$$\lim_{x \rightarrow 2^+} f(x) = \left[3 - \frac{2}{\sigma^+} \right] = -\infty$$



Asymptoten

$$\mathbb{W} = y \in \mathbb{R} \setminus \{3\}$$