



$$1. f(x) = \frac{1}{|x-a|} \quad \left[ \begin{matrix} a & b \\ -4 & 8 \end{matrix} \right]$$

$$|x-a| = 0$$

$$x-a = 0$$

$$x = a \quad \text{DISC.}$$

$$2. f(x) = x^2 + 2x - 15$$

$$0 = x^2 + 2x - 15$$

$$\text{psd} \quad 0 = (x+5)(x-3)$$

$$x+5=0 \quad x-3=0$$

$$x = -5 \quad x = 3$$

$$f'(x) = 2x + 2$$

$$2x + 2 = 0$$

$$2x = -2$$

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

$$x = -1$$

$$3. f(x) = 4x\sqrt{x+a}$$

$$0 = 4x\sqrt{x+a}$$

$$4x=0 \quad \sqrt{x+a}=0$$

$$\frac{4x}{4} = \frac{0}{4} \quad (\sqrt{x+a})^2 = 0^2$$

$$x=0 \quad x+a=0$$

$$x = -a$$

$$f(x) = \underbrace{4x}_P \underbrace{(x+a)^{1/2}}_Q$$

$$P' = 4 \quad Q' = \frac{1}{2}(x+a)^{\frac{1}{2}-1} \cdot \frac{d}{dx}(x+a)$$

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

$$Q' = \frac{1}{2(x+a)^{1/2}}$$

$$P'Q + PQ'$$

$$f'(x) = 4(x+a)^{1/2} + 4x \left( \frac{1}{2(x+a)^{1/2}} \right)$$

$$= \frac{4(x+a)^{1/2}}{1} + \frac{2x}{(x+a)^{1/2}}$$

$$= \frac{4(x+a)^{\frac{1}{2}}(x+a)^{\frac{1}{2}}}{(x+a)^{1/2}} + \frac{2x}{(x+a)^{1/2}}$$

$$= \frac{4(x+a)^1}{(x+a)^{1/2}} + \frac{2x}{(x+a)^{1/2}}$$

$$= \frac{4x+8+2x}{(x+a)^{1/2}}$$

$$= \frac{6x+8}{(x+a)^{1/2}}$$

$$\frac{6x+8}{(x+a)^{1/2}} = 0$$

$$(x+a)^{1/2} \left( \frac{6x+8}{(x+a)^{1/2}} \right) = 0 (x+a)^{1/2}$$

$$6x+8 = 0$$

$$6x = -8$$

$$x = -\frac{8}{6}$$

$$x = -\frac{4}{3}$$