3. $f(x) = x\sqrt{x+2}$

① Domain: $x+2 \geq 0$

$\boxed{x \geq -2}$

② X-INT: $0 = x\sqrt{x+2}$

$\boxed{x=0}$ $\sqrt{x+2} = 0$

$x+2 = 0$

$\boxed{x = -2}$

③ y-INT: $y = 0\sqrt{0+2}$

$\boxed{y=0}$

④ VA: $\boxed{\text{NONE}}$

⑤ HA: $\boxed{\text{NONE}}$

⑥ SA: $\boxed{\text{NONE}}$

⑦ $f(x) = \underbrace{x}_{P}\underbrace{(x+2)^{\frac{1}{2}}}_{Q}$

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

$= \dfrac{1}{2(x+2)^{1/2}}$

$P'Q + PQ'$

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

$= \dfrac{(x+2)^{1/2}}{1} + \dfrac{x}{2(x+2)^{1/2}}$

$= \dfrac{(x+2)^{1/2} \cdot 2(x+2)^{1/2}}{2(x+2)^{1/2}} + \dfrac{x}{2(x+2)^{1/2}}$

$= \dfrac{2(x+2)^{2/2}}{2(x+2)^{1/2}} + \dfrac{x}{2(x+2)^{1/2}}$

$= \dfrac{2(x+2) + x}{2(x+2)^{1/2}}$

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

$* \quad f'(x) = \dfrac{(3x+4)}{(2(x+2)^{1/2})}$

$3x+4 = 0 \qquad 2(x+2)^{1/2} = 0$

$3x = -4 \qquad\qquad x+2 = 0$

$x = -\dfrac{4}{3} \qquad\qquad x = -2$

$\boxed{\begin{array}{l} \text{DEC} \left(-2, -\frac{4}{3}\right) \\ \text{INC} \left(-\frac{4}{3}, \infty\right) \end{array}}$

⑧ RELATIVE EXTREMA

REL MIN $\left(-\frac{4}{3}, -1.1\right)$

$-\infty \qquad x = -2 \qquad\qquad x = -\frac{4}{3}$

$x = -3$	$x = -\frac{5}{3}$	$x = 0$	∞
ERROR	NEG	POS	T.C.
			PLUG INTO $f'(x)$

MIN