Recreate the following expression in inline mode:

$$\left(\frac{x^3}{3(x+1)^2}\right)^{\frac{1}{n}}$$

Recreate the following proof by using align:

The solution of $ax^2+bx+c=0$ where $a \neq 0$ is

$$\frac{-b \pm \sqrt{d}}{2a} \text{ where } d = b^2 - 4ac \tag{1}$$

Proof. We see that the equation is equivalent to

$$ax^2 + bx = -c \tag{2}$$

Or equivalently

$$-\frac{c}{a} = x^2 + \frac{b}{a}x = x^2 + 2\frac{b}{2a}x \tag{3}$$

By adding $\left(\frac{b}{2a})\right)^2$ to both sides we get

$$\begin{aligned} \left(\frac{b}{2a}\right)^2 - \frac{c}{a} &= x^2 + 2\frac{b}{2a} + \left(\frac{b}{2a}\right)^2 \qquad (4) \\ &= \left(x + \frac{b}{2a}\right)^2 \qquad (5) \end{aligned}$$

By multiplying $4a^2$ to bot sides we get

$$b^2 - 4ac = (2ax+b)^2 \tag{6}$$

So

$$\pm\sqrt{b^2-4ac} = 2ax + b \tag{7}$$

And therefore

$$\frac{-b \pm \sqrt{b^2-4ac}}{2a} = x \tag{8}$$

□