a)

$$\frac{dy}{dx} = ry$$

$$\frac{dy}{y} = r\,dx$$

$$\int \frac{dy}{y} = \int r\,dx$$

$$\ln y = rx + C$$

$$\boxed{y = e^{rx+C}}$$

b)

$$\frac{dy}{dx} = ry(s-y)$$

$$\frac{dy}{y(s-y)} = r\,dx$$

$$\int \frac{dy}{y(s-y)} = \int r\,dx$$

$$\frac{1}{s}\ln\left|\frac{y}{s-y}\right| = rx + C$$

$$\frac{y}{s-y} = \pm\, e^{s(rx+c)}$$

$$y = \pm\left(se^{s(rx+c)} - ye^{s(rx+c)}\right)$$

$$y\left(1 \pm e^{s(rx+c)}\right) = \pm\, se^{s(rx+c)}$$

$$\boxed{y = \pm\, \frac{se^{s(rx+c)}}{1 \pm e^{s(rx+c)}}}$$