1. $f(x) = 5^{x-2} + 4$ D: $(-\infty, \infty)$ R: $(4, \infty)$

$x = 5^{y-2} + 4$

$x - 4 = 5^{y-2}$

$\log_5 (x-4) = \log_5 5^{y-2}$

$\log_5 (x-4) = y-2$

$\boxed{f^{-1}(x) = \log_5 (x-4) + 2 \quad D: (4, \infty) \quad R: (-\infty, \infty)}$

2. $f(x) = \log_3 (x-4)$ D: $(4, \infty)$ R: $(-\infty, \infty)$

$x = \log_3 (y-4)$

$3^x = 3^{\log_3 (y-4)}$

$3^x = y - 4$

$\boxed{f^{-1}(x) = 3^x + 4 \quad D: (-\infty, \infty) \quad R: (4, \infty)}$

3. $f(x) = -2\left(\frac{1}{2}\right)^{x+1} - 6$ D: $(-\infty, \infty)$ R: $(-\infty, -6)$

$x = -2\left(\frac{1}{2}\right)^{y+1} - 6$

$x + 6 = -2\left(\frac{1}{2}\right)^{y+1}$

$-\frac{1}{2}(x+6) = \frac{1}{2}^{y+1}$

$\log_{\frac{1}{2}}\left(-\frac{1}{2}(x+6)\right) = \log_{\frac{1}{2}} \frac{1}{2}^{y+1}$

$\log_{\frac{1}{2}}\left(-\frac{1}{2}(x+6)\right) = y + 1$

$\boxed{f^{-1}(x) = \log_{\frac{1}{2}}\left(-\frac{1}{2}(x+6)\right) - 1 \quad D: (-\infty, -6) \quad R: (-\infty, \infty)}$

4. $f(x) = 4 \log_{\frac{1}{3}} (x+2)$ D: $(-2, \infty)$ R: $(-\infty, \infty)$

$x = 4 \log_{\frac{1}{3}} (y+2)$

$\left(\frac{1}{3}\right)^{\frac{1}{4}x} = \left(\frac{1}{3}\right)^{\log_{\frac{1}{3}} (y+2)}$

$\left(\frac{1}{3}\right)^{\frac{1}{4}x} = y + 2$

$\boxed{f^{-1}(x) = \left(\frac{1}{3}\right)^{\frac{1}{4}x} - 2 \quad D: (-\infty, \infty) \quad R: (-2, \infty)}$

5. $f(x) = -\frac{2}{5}(3)^{x-4}$ D: $(-\infty, \infty)$ R: $(-\infty, 0)$

$x = -\frac{2}{5}(3)^{y-4}$

$-\frac{5}{2}x = (3)^{y-4}$

$\log_3(-\frac{5}{2}x) = y-4$

$\boxed{f^{-1}(x) = \log_3(-\frac{5}{2}x)+4 \quad D: (-\infty, 0) \quad R: (-\infty, \infty)}$

6. $f(x) = 3\log_5(x+7)-1$ D: $(-7, \infty)$ R: $(-\infty, \infty)$

$x = 3\log_5(y+7)-1$

$x+1 = 3\log_5(y+7)$

$\frac{1}{3}(x+1) = \log_5(y+7)$

$5^{\frac{1}{3}(x+1)} = y+7$

$\boxed{f^{-1}(x) = 5^{\frac{1}{3}(x+1)}-7 \quad D: (-\infty, \infty) \quad R: (-7, \infty)}$

7. $f(x) = 5e^{2(x-3)}-2$ D: $(-\infty, \infty)$ R: $(-2, \infty)$

$x = 5e^{2(y-3)}-2$

$x+2 = 5e^{2(y-3)}$

$\frac{1}{5}(x+2) = e^{2(y-3)}$

$\ln(\frac{1}{5}(x+2)) = 2(y-3)$

$\frac{1}{2}\ln(\frac{1}{5}(x+2)) = y-3$

$\boxed{f^{-1}(x) = \frac{1}{2}\ln(\frac{1}{5}(x+2))+3 \quad D: (-2, \infty) \quad R: (-\infty, \infty)}$

8. $f(x) = \frac{1}{2}\ln[-(x-3)]+6$ D: $(-\infty, 3)$ R: $(-\infty, \infty)$

$x = \frac{1}{2}\ln[-(y-3)]+6$

$x-6 = \frac{1}{2}\ln[-(y-3)]$

$2(x-6) = \ln[-(y-3)]$

$e^{2(x-6)} = -(y-3)$

$-e^{2(x-6)} = y-3$

$\boxed{f^{-1}(x) = -e^{2(x-6)}+3 \quad D: (-\infty, \infty) \quad R: (-\infty, 3)}$