

$$(1) N(t) = 143,100 e^{0.0395t}$$

$$(2) 3600 \text{ years old}$$

$$N(16) = 269,000$$

$$(3) a. \$25,238.87$$

$$(4) \$4,773.84$$

$$(5) 14 \text{ years}$$

$$b. \$25,242.71$$

$$(6) x = 2.93$$

$$(7) 1 = \log \left[ \frac{2x+1}{3x-1} \right]$$

$$(3x-1) 10 = \frac{2x+1}{3x-1} (3x-1)$$

$$30x - 10 = 2x + 1$$

$$28x = 11$$

$$x = \frac{11}{28}$$

$$(8) -\log_5(3x-2) = -2$$

$$\log_5(3x-2) = 2$$

$$3x-2 = 25$$

$$3x = 27$$

$$x = 9$$

$$(9) u = e^x$$

$$u^2 - 3u + 2 = 0$$

$$(u-2)(u-1) = 0$$

$$u = 2 \quad u = 1$$

$$e^x = 2 \quad e^x = 1$$

$$x = \ln 2 \quad x = \ln 1$$

$$x = .69 \quad x = 0$$

$$x = 0, .69$$

$$(10) 3^{x+1} = 4$$

$$x+1 = \frac{\ln 4}{\ln 3}$$

$$x = .2619$$

$$(11) e^{3x-5} = \frac{7}{2}$$

$$3x-5 = \ln \left( \frac{7}{2} \right)$$

$$x = \frac{\ln \left( \frac{7}{2} \right) + 5}{3}$$

$$x = 2.0843$$

$$(12) 2x+7 > 0$$

$$x > -\frac{7}{2}$$

$$D_x \text{ of } f^{-1}(x): \left\{ x \mid x > -\frac{7}{2} \right\}$$

or

$$\left( -\frac{7}{2}, \infty \right)$$

$$(13) (x-2)(x-13) > 0$$

c.v. 2, 13

x-2	-		+		+
x-13	-		-		+
	+	2	-	13	+

$$D_x \text{ of } f^{-1}(x): (-\infty, 2) \cup (13, \infty)$$

$$(14) \frac{4}{13-x} > 0 \quad \text{c.v. } 13$$

4	+		+
13-x	+		-
	+	13	-

$$D_x \text{ of } f^{-1}(x): (-\infty, 13)$$

$$\textcircled{15} 2^3 = 8 \quad \textcircled{16} 4^{-3} = \frac{1}{64} \quad \textcircled{17} e^3 = x+7 \quad \textcircled{18} 3^3 = x$$

$$\textcircled{19} \log_5 25 = 2 \quad \textcircled{20} \log_6 216 = 3 \quad \textcircled{21} \ln 12.18 = 2.5 \quad \textcircled{22} \log_7 (2x+5) = 2$$