

3.2 b p.199-201 (2,4, 61-87 odd, 93-97 odd, ~~118~~)

(2) common, natural

(4) If  $x = e^y$  then  $y = \log_e x$  or  $y = \ln x$

(61)  $\ln 6 = 1.7917$   
 $\log_e 6 = 1.7917$   
 $e^{1.7917} \approx 6$

(73)  $\sqrt[3]{e} = 1.3956 \dots$

$e^{\frac{1}{3}} = 1.3956 \dots$   
 $\log_e 1.3956 \dots = \frac{1}{3}$

$\ln 1.3956 \dots = \frac{1}{3}$

(63)  $\ln e = 1$   
 $\log_e e = 1$   
 $e^1 = e$

(75)  $\sqrt{e^3} = 4.4816 \dots$

$(e^3)^{\frac{1}{2}} =$

$e^{\frac{3}{2}} = 4.4816 \dots$

$\log_e 4.4816 = \frac{3}{2}$

$\ln 4.4816 = \frac{3}{2}$

(83)  $e^{\log_e 1.8}$

$\star e^{\log_e x} = x$

$\boxed{1.8}$

(65)  $\ln \sqrt{e} = \frac{1}{2}$   
 $\log_e e^{\frac{1}{2}} = \frac{1}{2}$   
 $e^{\frac{1}{2}} = e^{\frac{1}{2}}$

(67)  $\ln 9 = 2.1972$   
 $\log_e 9 = 2.1972$   
 $e^{2.1972} \approx 9$

(77)  $f(x) = \ln x \quad x=11$

$f(11) = \ln 11$   
 $\approx 2.398$

(85)  $e(\ln 1)$   
 $e(0) = \boxed{0}$

(69)  $e^3 = 20.0855 \dots$

$\log_e 20.0855 \dots = 3$

$\ln 20.0855 = 3$

(79)  $f(x) = -\ln x \quad x = \frac{1}{2}$

$f(\frac{1}{2}) = -\ln(\frac{1}{2})$

$\approx 0.693$

(87)  $\ln(e \ln e)$

$\star \ln e = 1$

$\ln(e^1)$

$\boxed{1}$

(71)  $e^{1.3} = 3.6692 \dots$

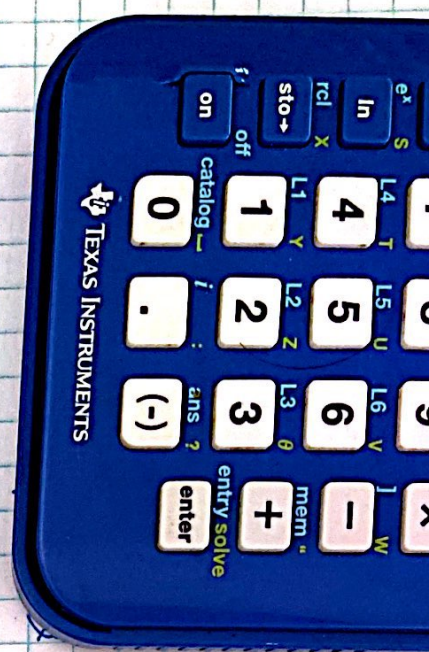
$\log_e 3.6692 = 1.3$

$\ln 3.6692 \dots = 1.3$

(81)  $\ln e^2$   
 $\log_e e^2 = \square$

$e^{\square} = e^2$

$\boxed{2}$





93.  $f(x) = \ln x$      $g(x) = \ln(x+8)$   
 horz shift 8 units left

95.  $g(x) = \ln x - 5$   
 vertical shift down 5

97.  $g(x) = \ln(x-1) + 2$   
 horz shift 1 unit right    vert shift up 2



a.  $T = \frac{\ln K}{0.035}$

iii.

K	1	2	4	6	8	10	12
t	$\frac{\ln(1)}{0.035}$	$\frac{\ln(2)}{0.035}$	$\frac{\ln(4)}{0.035}$	$\frac{\ln(6)}{0.035}$	$\frac{\ln(8)}{0.035}$	$\frac{\ln(10)}{0.035}$	$\frac{\ln(12)}{0.035}$
a	0	19.804	39.608	51.193	59.413	65.784	70.997

b.  $y = (\ln(x)) \div 0.035$

