

7, 9, 11, 15

7. $\int_m^{\infty} f(x) = \frac{1}{2}$

$$\int_m^{\infty} \frac{1}{5} e^{-t/5} dt$$

$$= \left[-e^{-t/5} \right]_m^{\infty}$$

$$0 + e^{-m/5} = \frac{1}{2}$$

$$\frac{-m}{5} = \ln\left(\frac{1}{2}\right)$$

$$m = -5 \ln\left(\frac{1}{2}\right)$$

$$\approx \boxed{3.4657}$$

9. a) $\int_4^{\infty} \frac{1}{5} e^{-t/5} dt$ $\mu = 2.5$

$$= \int_4^{\infty} e^{-2t/5} dt$$

$$= \left[-e^{-2t/5} \right]_4^{\infty}$$

$$= 0 + e^{-8/5}$$

$$\approx \boxed{0.202}$$

b) $\int_0^{2.5} \frac{2}{5} e^{-t/5} dt$

$$= \left[-e^{-t/5} \right]_0^{2.5}$$

$$= -e^{-0.5} + 1$$

$$\approx \boxed{0.55}$$

c) $\int_n^{\infty} \frac{2}{5} e^{-t/5} dt = 0.02$

$$= \left[-e^{-t/5} \right]_n^{\infty} = 0.02$$

$$= 0 + e^{-2n/5} = 0.02$$

$$\frac{-2n}{5} = \ln 0.02$$

$$-2n = 5 \ln 0.02$$

$$n = \frac{-5 \ln(0.02)}{2}$$

$$\approx \boxed{9.78 \text{ minutes}}$$

11. $\int_0^{\infty} \frac{1}{4.2\sqrt{2\pi}} e^{-(x-9.4)^2 / 2(4.2)^2}$

$$\sigma = 4.2, \mu = 9.4$$

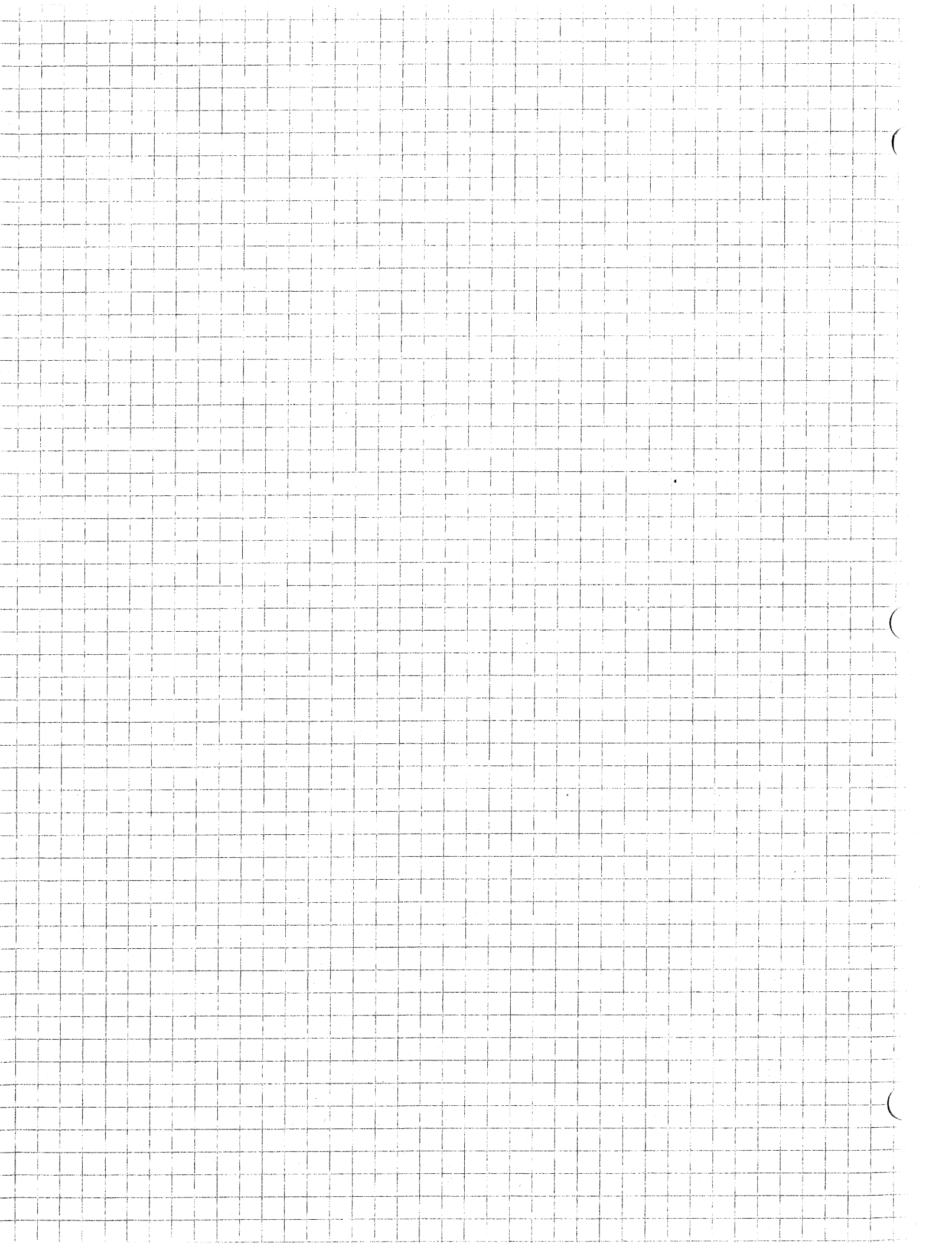
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$$7.) \int_m^{\infty} 2e^{-t/5} dt$$

$$-e^{-t/5} \Big|_m^{\infty}$$

$$-e^{-\infty/5} - (-e^{-m/5}) = \frac{1}{2}$$

$$e^{-m/5} = \frac{1}{2}$$

$$-\frac{m}{5} = \ln \left| \frac{1}{2} \right|$$

$$m = -5 \ln \left| \frac{1}{2} \right|$$

$$m = 3.47$$

$$9.) \int_4^{\infty} \frac{1}{25} e^{-t/25} dt$$

$$-e^{-t/25} \Big|_4^{\infty}$$

$$-e^{-\infty/25} - (-e^{-4/25})$$

$$0 + e^{-1.6}$$

$$a = 20\%$$

$$\int_0^2 \frac{1}{25} e^{-t/25} dt$$

$$-e^{-t/25} \Big|_0^2$$

$$-e^{-2/25} - (-e^{0/25})$$

$$b = 1 - .45 = 55\%$$

