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$f(0) = 1$

$f(-2) = 2$

$f(1) = -2.5 = -\frac{5}{2}$

$f(x) = ax^2 + bx + 1$, by $f(0) = 1$

$f(-2) = a(-2)^2 + b(-2) + 1 = 2$

$4a - 2b + 1 = 2$

$4a - 2b = 1$

$f(1) = a + b + 1 = -\frac{5}{2}$

$a + b = -\frac{7}{2}$

$a = -b - \frac{7}{2}$

$4(-b - \frac{7}{2}) - 2b = 1$

$-4b - 14 - 2b = 1$

$-6b - 14 = 1$

$-6b = 15$

$b = -\frac{15}{6} = -\frac{5}{2}$

$a = \frac{5}{2} - \frac{7}{2} = -\frac{2}{2} = -1$

$\therefore$ $f(x) = -x^2 - \frac{5}{2}x + 1$

§1.2 #11 See solns for full context.

a = age (yrs)

D = Adult dosage

c = child's dosage as function of a (mg)

$c = .041 D(a+1)$

$\text{Rise}/\text{Run} = \frac{\Delta y}{\Delta x} = \frac{\Delta c}{\Delta a} = \frac{mg}{yr}$

$\Rightarrow D = 200 mg$

(a) Slope of line c is $.041 D = .041(200)$

$= 8.2 \text{ mg/yr}$

(b) Newborn: $a = 0 \Rightarrow$

$c = \frac{8.2}{\frac{mg}{yr}} \underbrace{(a+1)}_{yrs} = 8.2(0+1) = 8.2 \text{ mg}$