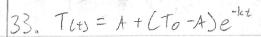
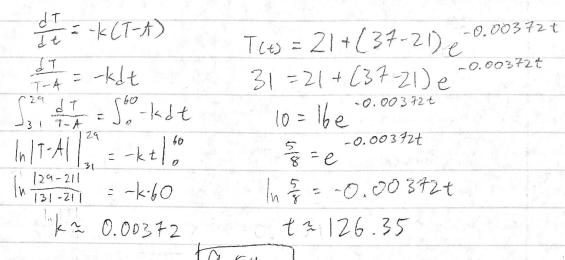
```
Tz = 29°C ) 60 =
To=31°C ) t=2.
A=ZI°C
              \frac{dT}{dt} = -k(T-A)
```



$$=-k(T-A)$$



9:54 pm

HW 2.4 #3, 4, 10, 15, 19, 22, 37

3.
$$y' + \frac{2y}{x} = \frac{\cos x}{x^2}$$

$$q = -\frac{2}{x}, f = \frac{\cos x}{x^2}$$

$$y'x^2 + 2xy = \cos x$$

$$(x^2y)' = \cos x$$

$$u(t) = e^{-\frac{2}{x}} = e^{-\frac{2}{x^2}}$$

$$(x^2y)' = \cos x$$

x2y = Scosxdx = Shx+C y = sin x +c

4. y'+2+y=5+ a=2t, 5=54 y'e t' + 2 t y e t' = 5 t e t' w(t) = e +52 t d t = e t' (yet) = Stet

yet2= S5tetdt = 5.25endn = 5etC= 2etC yet = = = et (=) [y=5+Ce-t2]

a = m, $f = C_1 e^{mx}$ $w(x) = e^{-Smdx} = -mx$ 10. y'-my = c.e mx y'e-mx-mye-mx = (, (ye-mx) = L. ye= x = c,x+c => y=e x (c,x+c)/



 $\alpha = \frac{3x}{x^2+1}, \ \beta = \frac{6x}{x^2+1}$ 15. Lx2+1) y +3xy=6x, y(0)=-1 $\int \frac{3x}{x^{2}+1} dx = \frac{3}{2} |n(x^{2}+1)|$ W(x) = C = C = 0 $y' + \frac{3x}{(x^2+1)}y = \frac{6x}{x^2+1}$ $y'(x^2+1)^{\frac{3}{2}}+3xy\sqrt{x^2+1}=6x\sqrt{x^2+1}$ $\left(y(x^2+1)^2\right)' = -6x\sqrt{x^2+1}$ Y (x2+1)= 56x Jx2+1 dx = 2(x2+1)=+C y=2+((x2+1)== $y(0) = 2 + C(0+1)^{\frac{3}{2}} = -1$ $y(x) = 2 - 3(x^2 + 1)^{-\frac{3}{2}}$ C = -3M. (2x+3) y = y + (Zx+3) = , y(-1)=0 $(2x+3)y'-y=\sqrt{2x+3}$ $\alpha = (2x+3), f = \sqrt{2x+3}$ $y'-\frac{y}{(2x+3)} = \sqrt{2x+3}$ $w(x) = e^{-\frac{1}{2}(n/2x+3)} = \sqrt{2x+3}$ $w(x) = e^{-\frac{1}{2}(n/2x+3)}$ (2x+3)y'-y=52x+3 $y' \cdot \sqrt{\frac{y}{2x+3}} - \frac{y}{(2x+3)^{\frac{3}{2}}} = \frac{1}{2x+3}$ $\left(\frac{y}{52x+3}\right)' = \frac{1}{2x+3} \qquad m = 2x+3 \qquad dn = 2dx$ $\frac{y}{\sqrt{2x+3}} = \int \frac{1}{2x+3} dx = \frac{1}{2} \int \frac{1}{n} dn = \frac{1}{2} \ln |2x+3| + C$ Y = = 1 J2x+3 In (2x+3) +C Y(-1) = = 5T / + C = 0, C=0 Y(+) = \frac{1}{2} \int 2x+3 \ln (2x+3) \ [I of E is (-\frac{3}{2} \omega) \] becomese less than - 3 will make I and In undefined and -3 itself will also make In undering $72. x' = a(t)x + \delta(t)x''$ $n \neq 0, 1$ (= = = = (1-n)x" (a(+)x+f(+)x") = (1-n) (a(+)x1-n+f(+))

y'= a(+)y+8(+)



C. X(0) = 20 - 20/ = 20/hs.)