Solutions to MORE PRACTICE

1.
$$\frac{\sqrt{(t^3+1)} - \frac{1}{2}3t^3(t^3+1)^{-\frac{1}{2}}}{t^3+1} = \frac{-\frac{1}{2}t^3+1}{(t^3+1)^{\frac{3}{2}}}$$

2.
$$\frac{-x^3-3}{x^3}$$

3.
$$(x+1)^2(5-x)^3(-7x+11)$$

4.
$$-2\sin(2m)$$

5.
$$2^{5x}\ln(2)(30+75x\ln(2))$$

6.
$$\frac{\beta+6\Gamma^5}{1-\beta}$$

7.
$$\frac{3}{\ln(2t^3)t}$$

8.
$$\begin{cases} e^x(1+x) & \text{if } x>0 \\ -e^x(1+x) & \text{if } x<0 \end{cases}$$

9.
$$\sqrt{3}\frac{1}{2}r^{-\frac{1}{2}} + 3\frac{1}{2}r^{-\frac{1}{2}} + \sqrt{3}\frac{1}{2}r^{-\frac{3}{2}}$$

10.
$$\frac{1}{y(1-\ln(y))^2}$$

11.
$$2$$

12.
$$2x\cosh(x^2+1), \quad \text{from chapter 3.8}$$

13.
$$\sin^{-2}(\tfrac{2}{t})\cos(\tfrac{2}{t})\frac{2}{t^2}$$

14.
$$\frac{1}{2}(3\theta + \tan^2(4\theta))^{-\frac{1}{2}}\left(3 + 2\tan(4\theta)\frac{4}{\cos^2(4\theta)}\right)$$

15.
$$\cos(\sqrt[3]{x} + 1) - \sin(\sqrt[3]{x} + 1)\frac{1}{3}x^{\frac{1}{3}}$$

16.
$$\pi(\cot(1) + \cot(u))^{\pi-1}\left(\frac{-1}{\sin^2 t}\right)$$

17.
$$\frac{ae^{az}(a^2 + z^2) - 2ze^{az}}{(a^2 + z^2)^2}.$$

18.
$$\frac{ax(x+4)}{(2-x)^4}$$

19.
$$\frac{8}{\sin(t)}$$