SOLUTIONS TO PROBLEM SET 13.1, page 612

2. Note that $z = 1 + i$ and $iz = i - 1 = -1 + i$ lie on the bisecting lines of the first and second quadrants.

8. $7 + 24i, \ 7 - 24i$

12. We obtain

$$\frac{z_1}{z_2} = \frac{(-2 - 11i)(2 + i)}{5} = \frac{-15 + 20i}{5} = -3 + 4i,$$

and

$$\frac{z_2}{z_1} = \frac{(2 - i)(-2 - 11i)}{125} = \frac{-15 - 20i}{125} = -\frac{3}{125} + 4i.$$

SOLUTIONS TO PROBLEM SET 13.2, page 618

4. $5 (\cos \pi + i \sin \pi)$

6. Simplification shows that the quotient equals $-2$. Answer: $2 \cos \pi + i \sin \pi$.

10. $\pi, \ -\pi + \arctan \left(\frac{1}{3}\right) = -2.944, \ \frac{1}{3}$

16. $3 + \sqrt{27i}$

18. $-5 + 5i$