Section 2.5 #4, 7, 8, 9, 12, 13, 14, 16, 22

HINTS:

(7, 8, 9, 12, 13) Examples 7-10 in section 2.5 show that there are a wide variety of methods for finding the Laurent series. Study these examples to see which methods might fit these exercises.

(14) A zero of order $m$ means $f(z) = (z - z_0)^m g(z)$ for some analytic $g(z)$ with $g(z_0) \neq 0$. Use this expression to help you analyze $f'/f$.

(16) See the expressions (4) p. 128 and (4) p. 137.

(22) For these you can use the known power series for $\exp(z)$, $\cos z$, etc.