Math 132 Homework 7

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4.4.2

4.4.3

4.4.5

4.4.6

4.5.1

4.5.2

4.5.4

4.5.13

P1 Use the geometric series formula to derive the power series expansion for the given function f centered at the given point z_0:

(a) $f(z) = \frac{z}{1-z}$, centered at $z_0 = 0$.

(b) $f(z) = \frac{z^2+1}{z-1}$, centered at $z_0 = 0$.

(c) $f(z) = \frac{1}{(1-z)^3}$, centered at $z_0 = 0$.

(d) $f(z) = \frac{1}{1-2z^3}$, centered at $z_0 = 0$.

P2 Find the Laurent series for $\frac{1}{(z-i)(z+2i)}$ in the given domain:

(a)

(b)

(c)