```
> restart:
> alphan := an·exp( -gamma·kn^2·( Do^2 - Di^2 ) )·cos( phin );
```

$$alphan := an\, e^{-\gamma kn^2 (Do^2 - Di^2)} \cos(phin) \tag{1}$$

```
> betan := an·exp( -gamma·kn^2·( Do^2 - Di^2 ) )·sin( phin );
```

$$betan := an\, e^{-\gamma kn^2 (Do^2 - Di^2)} \sin(phin) \tag{2}$$

```
> z := t→An·cos( 2·π·n·t / T ) + Bn·sin( 2·π·n·t / T );
```

$$z := t \to An \cos\left(\frac{2\,\pi\,n\,t}{T} \right) + Bn \sin\left(\frac{2\,\pi\,n\,t}{T} \right) \tag{3}$$

```
> An := ( alphan·( k + kD - m·( 2·π·n / T )^2 ) - betan·b·( 2·π·n / T ) )
        / ( ( k + kD - m·( 2·π·n / T )^2 )^2 + b^2·( 2·π·n / T )^2 );
```

$$An := \frac{1}{\left(k + kD - \frac{4\,m\,\pi^2\,n^2}{T^2} \right)^2 + \frac{4\,b^2\,\pi^2\,n^2}{T^2}} \left(an\, e^{-\gamma kn^2 (Do^2 - Di^2)} \cos(phin) \left(k + kD - \frac{4\,m\,\pi^2\,n^2}{T^2} \right) - \frac{2\,an\, e^{-\gamma kn^2 (Do^2 - Di^2)} \sin(phin)\, b\,\pi\,n}{T} \right) \tag{4}$$

```
> Bn := ( betan·( k + kD - m·( 2·π·n / T )^2 ) + alphan·b·( 2·π·n / T ) )
        / ( ( k + kD - m·( 2·π·n / T )^2 )^2 + b^2·( 2·π·n / T )^2 );
```

$$Bn := \frac{1}{\left(k + kD - \frac{4\,m\,\pi^2\,n^2}{T^2} \right)^2 + \frac{4\,b^2\,\pi^2\,n^2}{T^2}} \left(an\, e^{-\gamma kn^2 (Do^2 - Di^2)} \sin(phin) \left(k + kD - \frac{4\,m\,\pi^2\,n^2}{T^2} \right) + \frac{2\,an\, e^{-\gamma kn^2 (Do^2 - Di^2)} \cos(phin)\, b\,\pi\,n}{T} \right) \tag{5}$$

```
> simplify( m·( d/dt )( ( d/dt ) z(t) ) + b·( d/dt ) z(t) + ( k + kD )·z(t) - ( alphan·cos( 2·π·n·t / T )
      + betan·sin( 2·π·n·t / T ) ) );
```

$$0 \tag{6}$$

```
>
```